

Malheur Resource Area
100 Oregon Street
Vale, Oregon 97918

August 2007

BLM
Vale District

NORTH FORK MALHEUR GEOGRAPHIC MANAGEMENT AREA - *RANGELAND HEALTH PROJECT*



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 historical 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.

Cover Photo:
North Fork Malheur River and adjacent uplands in Agency Mountain Allotment (00161), North Fork Malheur Geographic Management Area.

BLM\OR\WA\AE-07\048+1792



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

VALE DISTRICT

100 Oregon Street

Vale, Oregon 97918

<http://www.or.blm.gov/Vale/>

August 13, 2007

IN REPLY REFER TO:

1601

NFMGMA

Dear Interested Public:

It is my pleasure to present the Revised Final North Fork Malheur Geographic Management Area Rangeland Health Project Environmental Assessment # OR-030-06-007 and Finding of No Significant Impact.

As a result of close cooperation, coordination, and input, the attached analysis of land management actions and subsequent decisions will provide progress toward achievement of the Standards of Rangeland Health and Southeast Oregon Resource Management Plan objectives. Revisions of the initial EA submitted for comment on April 20, 2006 resulted from valued input from you, the interested public, affected resource users, and state and local agencies.

Responses to public comment received following the initial release of the EA are available for viewing at the Vale District BLM office. Substantive comments were either addressed through this revision, or responded to in the narratives noted above.

I thank you in advance for your continued engagement in the process and upcoming implementation.

Sincerely,

/s/

Pat Ryan
Field Manager
Malheur Resource Area



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
100 Oregon Street
Vale, Oregon 97918
<http://www.or.blm.gov/Vale>



FINDING OF NO SIGNIFICANT IMPACT (FONSI) For Environmental Assessment No. OR-030-006-007 North Fork Malheur GMA

The types of impacts to the human environment expected from the implementation of Preferred Alternative II of Revised EA No. OR-030-06-007 (EA) were anticipated and declared within the analysis of the Southeast Oregon Resource Management Plan and Environmental Impact Statement (SEORMP/EIS) and the Record of Decision (ROD) of September 2002. The site specific impacts described in the EA are no greater than those anticipated in the EIS. The EA specifically tiers to, and incorporates by reference, the analysis in the SEORMP/EIS, in accordance with CEQ regulations Sec. 1502.20 and 1502.21. To the extent there are impacts beyond those described in the SEORMP/EIS, they are not significant. The EA also incorporates the Summaries and Determinations (Appendix C in the Draft EA) that were completed in 2003 and 2004 for the North Fork Malheur Geographic Management Area, which provide the foundation (existing environment) for management alternatives analyzed.

The preferred alternative allows BLM to strike a balance between natural values and commodity uses in a manner consistent with the principles of “multiple use” and applicable law. Specific resource objectives are identified in the SEORMP ROD (2002). Where appropriate, these ROD objectives are repeated through the impact analysis section of the EA along with indications of how these objectives will be met. For the Preferred Alternative (Alternative II), these ROD objectives, as well as more specific objectives identified in the EA, will be achieved through a variety of livestock management actions, mitigation measures, projects, and land treatments without creating any significant impacts.

The EA thoroughly analyzes the impacts of a range of alternatives developed through scoping and it clearly indicates that the preferred alternative, with specific mitigation measures identified, will not significantly affect the human environment. Specific mitigation measures, described in Section 7 of the EA, will ensure that resource values are protected through avoidance, by reducing impact to a level that is not significant, by rectifying disturbance through rehabilitation actions, or by compensating for the impact by replacement. Mitigation is applied to proposed actions to minimize or avoid impacts, even though the action(s), without mitigation, may not rise to the level of “significant,” as defined in 40 CFR 1508.

To make this finding of no significant impact (FONSI), BLM is required to consider the “context” (or scope), as well as the “intensity” of impacts. The “context” of the analysis is stepped down from the Interior Columbia Basin Ecosystem Management Project (ICBEMP) Science Findings (broad scale, regional analysis covering eastern Oregon, southern Idaho, northern Nevada, northern Utah, and western Montana), through the SEORMP/EIS (mid scale analysis addressing land use, covering the whole of Malheur County and a portion of Harney County) and ending with the NFMGMA Rangeland Health Project/EA (fine scale, local level planning with analysis at the activity and project level). The preferred alternative, as described, will have little if any effect on the human environment at the national level or beyond. The physical effects of projects will be minuscule and largely unnoticeable even at the local level. None of the actions contemplated are irreversible and the only irretrievable commitments are in the funding and associated materials necessary to put projects in place. The short-term benefits of the new grazing systems will be immediately noticeable to only those with a trained eye and knowledge of the capability and potential of these ecological systems. The long-term effect of the preferred alternative should be a steady, measurable improvement of local ecological systems that will be noticed by most observers familiar with lands in the NFMGMA.

The “intensity” of impacts, beneficial and adverse, is thoroughly described in the Environmental Impacts section of the EA. Intensity is a component of “significance” and is determined by applying ten criteria (see CEQ regulations Sec. 1508.27). In review of these criteria, relative to the preferred Alternative II, I have found:

Beneficial and adverse effects. Though on balance the cumulative effects are positive, there will be no significant effects (positive or negative) relative to the CEQ definition. Rangeland and watershed health, ecological functions, productivity, upland wildlife habitat, and riparian habitat will be protected and improved by the combined benefits of the proposed actions. Cultural resources and special status species will be protected. Wilderness Study Areas (WSAs) and Wild and Scenic Rivers (WSRs), will be protected and enhanced. Outstanding opportunities for primitive and unconfined recreation will remain, and naturalness will be enhanced. Impacts to the Areas of Critical Environmental Concern (ACECs) will not affect the relevant and important values. Grazing operations will be more costly to operate, but will remain sustainable.

Public health or safety. There will be no significant effects on public health or safety. The non-structural projects, such as juniper, aspen, mountain mahogany and sagebrush treatments will impact a major part of the NFMGMA (up to 65% of the total land area), and will improve ecological function and productivity. Any effects associated with these treatments through burning or mechanical means, by way of emissions of smoke or dust, will be short lived and within the parameters of natural occurrences. The area is very remote, and so the chances of affecting members of the general public in any measurable way will also be remote. Herbicide use is not an option for these mechanical treatments at this time, and will require additional site specific NEPA analysis, as pointed out in the EA. Since it is not a viable option, it is not considered further. The structural projects involved and execution of the new grazing systems will not significantly affect public health and safety. Any threats will be localized, limited to those involved with construction and maintenance activities, and within accepted norms for such work.

Unique areas. There are some unique, specially managed areas within the NFMGMA including WSAs, WSR, and ACECs; however, they will not be significantly affected. Any negative impacts in WSAs, from the project work proposed, are offset by the cumulative benefits to ecosystem health and function which will contribute directly to enhanced naturalness. Opportunities for primitive recreation and solitude will not be diminished. Implementation of the preferred alternative with the mitigation described in Section 7 of the EA, including careful selection of construction materials and vegetation treatment methods, and judicious placement to maximize vegetative and topographic screening, will adequately protect and enhance both WSA and WSR values. Fences can be removed and the physical impacts associated will be temporary in nature. Grazing systems with the supporting spring redevelopment projects and fences will allow for improved health of riparian systems and maintain health and function of uplands. The relevant and important values of the ACECs will not be affected by the proposed actions and are adequately protected by restrictions to development and use put in place under the SEORMP ROD.

Highly Controversial Effects. The new grazing systems will place new burdens on the affected ranchers, as livestock will be moved more often. The cost of project construction will be partially borne by the permittees and the maintenance responsibility will be totally borne by them. These new costs will be added to the operational costs they already bear and will certainly have negative impacts on their profits. Nevertheless, the grazing operations will remain sustainable, and rangeland health and productivity will be protected and enhanced. Similar measures have been successfully initiated by voluntary agreement with permittees here (as under the interim grazing measures initiated in accordance with 43 CFR 4180 in the spring of 2003) and elsewhere on the Vale District. Therefore, they should not be considered overly controversial. Any effects on the human environment which are related to “land use” allocation issues were addressed and decided in the SEORMP/EIS and the subsequent ROD, and are outside the scope of this EA.

Unique or unknown risks. The SEORMP/EIS and this EA cover the anticipated impacts thoroughly. However, CEQ’s *Considering Cumulative Effects* (pp. 46) *Addressing Uncertainty through Monitoring and Adaptive Management* states, “The complexity of cumulative effects problems ensures that even rigorous analyses will contain substantial uncertainties about predicted environmental consequences.” This guidance goes on to say, “Monitoring provides the means to identify the need for modifying (increasing or decreasing) mitigation...” The SEORMP/EIS and this EA rely on applicable scientific findings, monitoring, rangeland health assessments, published studies, professional contacts, and stated mitigation measures to keep uncertain effects and unknown risks at insignificant levels.

Precedent for future actions. There are no precedents, relative to future actions with significant effects, which will be established. The specific actions involved in the preferred alternative have all been done before, separately and collectively, in the course of management of public lands over the past 50 years. There are no irreversible commitments of resources involved with the preferred alternative. The structural projects involved could be eliminated and the physical disturbance rehabilitated. The non-structural projects (i.e. aspen, mountain mahogany, sagebrush, and juniper treatments) will naturally change over time as aspen, mountain mahogany, sagebrush and junipers seed back into the treated areas, as in the past. The aspen, mountain mahogany, sagebrush and juniper treatment processes will emulate natural vegetation removal through wildfire.

Cumulative Effects. The impacts of proposed actions have been analyzed and considered, separately and cumulatively, at multiple scales of analysis by considering ICBEMP science findings, SEORMP/EIS, and this EA. Impacts are either not significant, are mitigated below significance, or were declared and addressed in the SEORMP/EIS. The cumulative effect of implementation of the preferred alternative is also not significant and is within the scope of the cumulative effects analysis disclosed in the SEORMP/EIS, which this EA specifically incorporates by reference.

Impacts to significant scientific, cultural, or historical resources. Cultural resources (historic and prehistoric) are protected by mitigation measures that require avoidance based on surveys completed prior to any surface disturbance. Fencing of riparian areas and exclusion of grazing from these areas will protect cultural material where present. General grazing impacts on uplands are dispersed and do not pose a significant risk to cultural sites. Materials on the surface may be spatially rearranged, by various forces (natural and introduced), but the diagnostic value of subsurface materials is not significantly affected by dispersed grazing impacts.

Federally listed endangered or threatened species. Federally listed species in NFMGMA include the northern bald eagle and bull trout. The northern bald eagle is winter resident only and will not be affected by the proposed actions. Bull trout are listed as a Threatened species and occur in the NFMGMA. The proposed livestock management, which implements a timing and duration of livestock use that is appropriate for riparian areas, is in compliance with the Terms and Conditions set forth by USFWS in their 2000 Biological Opinion governing grazing actions in NFMGMA. For special status species, additional mitigation measures, such as inventory and avoidance of special status plants and surveys prior to land treatment in potential pygmy rabbit habitat, provide an extra measure of protection and conformance with Oregon/Washington special status species policy. Greater sage-grouse habitats will be substantially protected as a result of livestock utilization limits, limited project development, specific mitigation measures associated with projects, and improvement and maintenance of riparian and upland systems through vegetation treatments.

Compliance with Federal, State, or local law. The preferred alternative is in compliance with federal, state, and local law and requirements relative to environmental protection. Further, it is in conformance with the SEORMP/EIS and ROD.

Therefore, based upon my review and for the aforementioned reasons, no Environmental Impact Statement is required.

/s/

August 13, 2007

Pat Ryan
Field Manager
Malheur Resource Area
Vale District, Bureau of Land Management

Date

NFMGMA Rangeland Health Project
Environmental Assessment
 EA # OR-030-006-007

Decision Record

Introduction

This Decision Record documents my decision to implement the general land management actions of the proposed alternative (Alternative II) in EA # OR-030-006-007 for managing 123,677 acres of public land in the North Fork Malheur Geographic Management Area (NFMGMA) within the Malheur Resource Area of the Vale District.

The Southeastern Oregon Resource Management Plan and Record of Decision (SEORMP ROD, 2002) specified a management framework based upon the principles of ecosystem-based management. The fine-scale tier of the framework involves the assessment, evaluation, and planning for individual geographic management areas (GMAs). The NFMGMA was assessed for compliance with the Standards and Guidelines of Rangeland Health (S&Gs), evaluated, determinations made, recommendations listed in the Summary Determinations (2003 and 2004), and planning executed in EA # OR-030-006-007 to complete the fine-scale management prescription for the area. While the S&Gs are a regulatory mechanism for grazing permit renewal, the SEORMP also recognized the application of the assessment and evaluation for determining management needs for resources not meeting the S&Gs due to influences other than livestock grazing. This decision record documents my decision to implement only those actions to manage resources not meeting the S&Gs for reasons other than livestock grazing. Grazing management actions detailed in the EA are exempted from this decision and are issued under separate authority.

Three alternatives for management of the North Fork Malheur Geographic Management Area (NFMGMA) were analyzed and are described in detail in EA # OR-030-006-007 and Finding of No Significant Impact. The alternatives and management objectives were formulated by an interdisciplinary team of resource specialists using input from public participation beginning in April, 2000.

Alternative I represented “no action,” which meant land management activities would continue to be developed and analyzed without respect to impacts at the landscape-scale or issues identified during the Standards and Guidelines of Rangeland Health (S&Gs).

Alternative II represented the proposed action which would implement the recommendations as described in EA # OR-030-006-007, Appendix E, including construction of new recreation sites, western juniper treatment, exotic annual grass treatment, brush mowing, rangeland seeding, prescribed fire treatments, aspen and mountain mahogany treatments, best management practices (BMPs), project design and construction elements, and mitigating measures.

Alternative III represented an “environmentally friendly” alternative which would limit land management activities such as western juniper treatment while providing for accelerated progress toward meeting the S&Gs where they were not met due to current livestock grazing impacts. Other treatments would be implemented as in Alternative II.

Decision

My decision is to authorize the implementation and/or construction of the projects listed below:

Project Name	Pasture	Project Description	Anticipated Year of Implementation
Agency Mountain			
JUOC treatment	All	Up to 2,525 Acres	2009-2018

Project Name	Pasture	Project Description	Anticipated Year of Implementation
Allot. # 6			
JUOC treatment	Juniper Gulch	Treat bitterbrush sites - winter/spring burn only individual trees, up to 5,038 acres	2007-2008
Horseshoe Bend Rec.	Malheur River	Camp/fee site, <10 camp sites, trail, rock road, gate @ hwy., parking area	As funding and staff time permit
Beulah			
Little Seeding Mow	Little Seeding	Mow up to 70 acres	2007-2008
Big Seeding Mow	Big Seeding	Mow up to 60 acres	2007-2008
JUOC treatment	ALL	Up to 11,300 acres	2009-2018
Calf Creek			
JUOC treatment	ALL	Up to 12,840 acres	2009-2018
Aspen	Dishrag	Treated appropriately with fire, mechanical, and/or temporary fencing.	2009-2018
Castle Rock			
JUOC treatment	ALL	up to 11,075 Ac.	2007-2018
Aspen	Castle Rock Allotment	Treated appropriately with fire, mechanical, and/or temporary fencing. Within WSA, Rx Fire only.	2009-2018
Mountain Mahogany	Castle Rock	Treated appropriately with fire, mechanical, and/or temporary fencing. No treatment within WSA.	2009-2018
Chukar Park			
Chukar Park Rec. NEW		Pull-out north of existing campground, rock road, unimproved camping allowed.	As funding and staff time allow.
Chukar Park Rec. Site - update		Improvements would include: developing 3 -5 additional individual camp sites north of the 2 restrooms adjacent to campsite number four (should future use demands indicate their need); installing a septic system	As funding and staff time allow
Cottonwood Creek			
JUOC treatment	ALL	Up to 853 Ac.	2009-2018
Dearmond-Murphy			
Hunter Spring Rec. Devel.	Castle Rock/New Jerry Cyn.	Enlarge Excl., 10 sites, 1 vault toilet, rock access	As funding and staff time allow
Hunter Spring/Castle Rock Trail	Jerry Cyn	Discovery trail - not advertised or signed	As funding and staff time allow
Castle Rock Guard Station	Castle Rock	Fee campsite w/ 10 sites, fence/cattle guard, new vault toilets	As funding and staff time allow
JUOC Treatment	ALL	up to 23,622 Ac.	2007-2018

Project Name	Pasture	Project Description	Anticipated Year of Implementation
Mountain Mahogany	DeArmond - Murphy Allotment	Treated appropriately with fire, mechanical, and/or temporary fencing. Within WSA, no treatment.	2009-2018
Medusa/BRTE Treatment	Beulah Seeding	Burn, spray, and seed 600 acres, seed grasses and forb(s)	2008-2010
Aspen	DeArmond - Murphy Allotment	Treated appropriately with fire, mechanical, and/or temporary fencing. Within WSA, Rx fire only.	2009-2018
Ironside Mountain East			
JUOC treatment		Up to 1,094 acres	2009-2018
Ironside Mountain West			
JUOC treatment		Up to 110 Acres	2009-2018
Kivett			
JUOC treatment		Up to 241 Acres	2009-2018
Lockhart Mountain			
JUOC treatment		Up to 1,033 Acres	2009-2018
Malheur River			
JUOC treatment		Up to 1,091 Acres	2009-2018
Ring Butte			
JUOC treatment		Up to 312 Acres	2009-2018
South Willow Creek			
JUOC treatment		Up to 1,028 Acres	2009-2018
Squaw Butte			
JUOC treatment		Up to 73 Acres	2009-2018
Whitley Canyon			
Medusa Treatment	Petes Mountain	Burn, Spray, and seed 600 acres, seed native grasses and forbs.	2008-2010
JUOC treatment	ALL	Up to 12,086 Ac.	2009-2018

All mitigation measures detailed in the environmental assessment will be implemented. Monitoring of the land treatments will be conducted in accordance with the SEORMP ROD, Appendix W, "Monitoring" (2002).

Rationale

I have selected the Proposed Action for the following reasons:

The actions to be implemented as a result of this decision are necessary because they are needed to provide progress toward meeting the S&Gs where they were not met, or to maintain rangeland health where they were met. The general land management actions were analyzed in the attached Environmental Assessment (EA OR-030-006-007), which indicated that the actions are consistent with applicable law, regulation, and policy. These actions are tiered to and are consistent with the Southeastern Oregon Resource Management Plan and Record of Decision, dated September, 2002 (SEORMP ROD, 2002). The actions would provide progress toward meeting both the S&Gs and the resource objectives specific to NFMGMA and resource objectives specified in the SEORMP ROD.

The Proposed Action interrupts the transition of sagebrush-bunchgrass plant communities to juniper woodlands within the planning area. Fire would be restored as a key disturbance process within the planning area to an extent feasible under the constraints of human safety, private property values, and resource values.

The Proposed Action removes encroaching vegetation and restores annual-dominated rangelands, thus protecting and enhancing important plant communities. It also thins overstocked timber stands, which improves forest health by increasing growth and vigor of retained trees, helps protect the stands from insects and diseases, and stimulates growth of grasses, forbs, and shrubs.

The Proposed Action enhances big game winter range and sage-grouse habitat within the planning area by reducing western juniper encroachment into browse areas and sagebrush habitats.

The Proposed Action improves landscape diversity. The removal of juniper and restoration of annual dominated areas will increase on-site vegetative species diversity with the restoration of native or adapted non-native species.

The Proposed Action is also needed to enhance the supplemental values of the Castle Rock Wilderness Study Area (WSA) and relevant and important values of the Areas of Critical Environmental Concern (ACECs). The project either meets the nonimpairment criteria in the Interim Management Policy for WSAs or is excepted as a beneficial action for management of wilderness characteristics and supplemental values.

The Proposed Action will provide additional recreational opportunity to the public by creating new recreation sites and by expanding the existing Chukar Park Recreation Site.

The Proposed Action is in compliance with Federal laws that mandate the management of public land resources (Federal Land Policy and Management Act of 1976).

This decision does not result in any undue or unnecessary environmental degradation.

Substantive comments received on the initial issuance of EA # OR-030-006-007 were either incorporated into the analysis or considered and responded to in narratives available for public review at the Vale District Office.

Appeal Rights

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4 and Form 1842-1. If an appeal is filed, your notice must be filed in the Vale District Office, 100 Oregon Street, Vale, Oregon 97918 within 30 days of receipt. The appellant has the burden of showing that the decision appealed is in error.

If you wish to file a petition, pursuant to regulation 43 CFR 4.21, for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for stay must accompany your notice of appeal. A petition for stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied.
2. The likelihood of the appellant's success on the merits.
3. The likelihood of immediate and irreparable harm if the stay is not granted.
4. Whether or not the public interest favors granting the stay.

/s/

Pat Ryan
Field Manager
Malheur Resource Area

August, 13, 2007

Date

BLM\OR\WA\AE-07\048+1792
Vale District Bureau of Land Management
EA # OR-030-006-007
NFMGMA Rangeland Health Project

Table of Contents

1	INTRODUCTION	14
1.1	PROPOSED ACTION	14
1.2	LOCATION OF PROPOSED ACTION.....	14
1.3	BACKGROUND	14
1.4	NEED FOR PROPOSED ACTION	15
1.5	CONFORMANCE WITH LAND USE PLANS	15
1.6	ACTIVITY PLAN LEVEL OBJECTIVES.....	16
1.7	ADAPTIVE MANAGEMENT	18
1.8	CHRONOLOGY OF MEETINGS FOR NFMGMA	19
2	DESCRIPTION OF ALTERNATIVES.....	21
2.1	ALTERNATIVE I – NO ACTION	21
2.2	ALTERNATIVE II – PROPOSED ACTION	21
2.3	ALTERNATIVE III – LIMITED GRAZING WITH SUSPENSION OF USE	23
2.4	ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS.....	26
3	NFMGMA MANAGEMENT ASSUMPTIONS.....	27
3.1	ASSUMPTIONS COMMON TO ALL ALTERNATIVES	27
3.2	RANGELAND VEGETATION	27
3.3	RANGELAND PROJECT DESIGN AND CONSTRUCTION ELEMENTS.....	29
3.4	RANGELAND AND GRAZING USE	29
3.5	ALLOTMENT BOUNDARY ADJUSTMENTS.....	31
3.6	WATER RESOURCES, RIPARIAN/WETLAND AREAS, BIOLOGICAL CRUSTS AND SOILS	31
3.7	AQUATIC SPECIES AND HABITATS	32
3.8	WILDLIFE AND WILDLIFE HABITATS/SPECIAL STATUS TERRESTRIAL SPECIES	33
3.9	RECREATION	34
4	AFFECTED ENVIRONMENT	36
4.1	TOPOGRAPHY/CLIMATE	36
4.2	ENERGY AND MINERAL RESOURCES	36
4.3	AIR QUALITY.....	36
4.4	RANGELAND VEGETATION	37
4.5	FOREST AND WOODLANDS	38
4.6	SPECIAL STATUS PLANT SPECIES	39
4.7	NOXIOUS WEEDS.....	40
4.8	RANGELAND/GRAZING USE	41
4.9	WATER RESOURCES AND RIPARIAN/WETLAND AREAS	46
4.10	SOILS.....	51
4.11	BIOLOGICAL CRUSTS.....	52
4.12	FIRE REGIME AND FIRE REGIME CONDITION CLASS, FIRE HISTORY, AND FUELS MANAGEMENT.....	54
4.13	AQUATIC SPECIES AND HABITATS	56
4.14	WILDLIFE AND WILDLIFE HABITATS; SPECIAL STATUS ANIMAL SPECIES	61
4.15	CULTURAL RESOURCES	72

4.16	PALEONTOLOGY	80
4.17	RECREATION AND VISUAL RESOURCES	80
4.18	SPECIAL MANAGEMENT AREAS.....	81
4.19	ENERGY AND MINERAL RESOURCES	82
4.20	LANDS AND REALTY	82
4.21	HUMAN USE AND VALUES.....	83
4.22	WILDERNESS CHARACTERISTICS	84
5	ENVIRONMENTAL ANALYSIS.....	86
5.1	RANGELAND VEGETATION	86
5.1.1	<i>Alternative I - Rangeland Vegetation</i>	86
5.1.2	<i>Alternative II - Rangeland Vegetation</i>	89
5.1.3	<i>Alternative III - Rangeland Vegetation</i>	94
5.2	FOREST AND WOODLANDS	96
5.2.1	<i>Alternative I - Forest and Woodlands</i>	96
5.2.2	<i>Alternative II - Forest and Woodlands</i>	97
5.2.3	<i>Alternative III - Forest and Woodlands</i>	97
5.3	SPECIAL STATUS PLANT SPECIES	97
5.3.1	<i>Alternative I - Special Status Plant Species</i>	98
5.3.2	<i>Alternative II - Special Status Plant Species</i>	98
5.3.3	<i>Alternative III - Special Status Plant Species</i>	98
5.4	NOXIOUS WEEDS.....	98
5.4.1	<i>Alternative I - Noxious Weeds</i>	98
5.4.2	<i>Alternative II - Noxious Weeds</i>	99
5.4.3	<i>Alternative III - Noxious Weeds</i>	99
5.5	RANGELAND/GRAZING USE	99
5.5.1	<i>Alternative I - Rangeland/Grazing Use</i>	99
5.5.2	<i>Alternative II - Rangeland/Grazing Use</i>	108
5.5.3	<i>Alternative III - Rangeland/Grazing Use</i>	118
5.6	WATER RESOURCES, RIPARIAN/WETLAND AREAS, SOILS AND BIOLOGICAL CRUSTS	122
5.6.1	<i>Alternative I - Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts</i>	123
5.6.2	<i>Alternative II - Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts</i>	126
5.6.3	<i>Alternative III - Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts</i>	132
5.7	FIRE REGIME, FIRE REGIME CONDITION CLASS AND FUELS MANAGEMENT	132
5.7.1	<i>Alternative I - Fire and Fuels</i>	133
5.7.2	<i>Alternative II - Fire and Fuels</i>	133
5.7.3	<i>Alternative III - Fire and Fuels</i>	133
5.8	AQUATIC SPECIES AND HABITATS.....	133
5.8.1	<i>Alternative I - Aquatic Species and Habitats</i>	134
5.8.2	<i>Alternative II - Aquatic Species and Habitats</i>	135
5.8.3	<i>Alternative III - Aquatic Species and Habitats</i>	138
5.9	WILDLIFE AND WILDLIFE HABITATS; SPECIAL STATUS TERRESTRIAL SPECIES.....	138
5.9.1	<i>Alternative I - Wildlife and Wildlife Habitats; Special Status Animal Species</i>	140
5.9.2	<i>Alternative II - Wildlife and Wildlife Habitats; Special Status Animal Species</i>	142
5.9.3	<i>Alternative III - Wildlife and Wildlife Habitats; Special Status Animal Species</i>	149
5.10	CULTURAL AND PALEONTOLOGICAL RESOURCES	151
5.10.1	<i>Alternatives I, II, and III - Cultural Resources</i>	151
5.10.2	<i>Alternatives I, II, and III - Paleontological Resources</i>	153
5.11	RECREATION AND VISUAL RESOURCES	153
5.11.1	<i>Alternative I - Recreation and Visual Resources</i>	154
5.11.2	<i>Alternative II - Recreation and Visual Resources</i>	154
5.11.3	<i>Alternative III - Recreation and Visual Resources</i>	155
5.12	SPECIAL MANAGEMENT AREAS.....	155
5.12.1	<i>Wild and Scenic Rivers (WSRs)</i>	155
5.12.2	<i>Wilderness Study Areas - WSAs</i>	156

5.12.3	<i>Areas of Critical Environmental Concern (ACECs)</i>	159
5.13	ENERGY AND MINERAL RESOURCES	160
5.13.1	<i>Alternatives I, II, and III - Energy and Mineral Resources</i>	160
5.14	LANDS AND REALTY	160
5.14.1	<i>Alternatives I, II, and III - Lands and Realty</i>	160
5.15	HUMAN USES AND VALUES	160
5.15.1	<i>Alternatives I and II - Human Uses and Values</i>	161
5.15.2	<i>Alternative III - Human Uses and Values</i>	161
6	CUMULATIVE EFFECTS OF THE ALTERNATIVES	162
6.1	ALTERNATIVE I	162
6.2	ALTERNATIVE II	162
6.3	ALTERNATIVE III.....	163
7	MITIGATING MEASURES	164
7.1	BEST MANAGEMENT PRACTICES	164
7.2	VISUAL RESOURCES AND MOTORIZED VEHICLE USE	164
7.3	RANGELAND VEGETATION	164
7.4	SPECIAL STATUS PLANT SPECIES	165
7.5	WATER RESOURCES AND RIPARIAN/WETLANDS AND AQUATIC SPECIES AND HABITATS	165
7.6	WILDLIFE AND WILDLIFE HABITAT AND SPECIAL STATUS ANIMAL SPECIES	165
7.7	RANGELAND/GRAZING USE MANAGEMENT	166
7.8	WILDERNESS STUDY AREAS.....	166
7.9	WILD AND SCENIC STUDY RIVER	167
7.10	CULTURAL RESOURCES	167
8	MONITORING.....	168
9	PERSONS AND AGENCIES CONSULTED.....	169
9.1	PERMITTEES	169
9.2	COOPERATING AGENCIES	169
9.3	INTERESTED PUBLICS	169
9.4	LOCAL/COUNTY ENTITIES	169
9.5	BUREAU OF LAND MANAGEMENT INTERDISCIPLINARY STAFF	169
10	REFERENCES	171
11	MAPS.....	177
12	GRAPHS.....	189
13	APPENDICES.....	191
13.1	APPENDIX A - VEGETATION TYPES	191
13.2	APPENDIX B - COMMON AND SCIENTIFIC NAMES FOR PLANTS AND ANIMALS IN THE SOUTHEAST OREGON RESOURCE MANAGEMENT PLAN AREA AS REVISED (2006)	193
13.2.1	<i>Plant Species</i>	193
13.2.2	<i>Animals</i>	195
13.3	APPENDIX C – ALTERNATIVE II GRAZING SCHEDULES.....	197
13.4	APPENDIX D – ALL PROJECTS	200
13.5	APPENDIX E - PROJECT IMPLEMENTATION TIMELINE	212
13.6	APPENDIX F - ACRONYMS	224

1 INTRODUCTION

1.1 Proposed Action

The proposed action is to implement management actions necessary to allow progress toward-and the attainment of the “Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington” (S&Gs) (USDI BLM 1997; USDI BLM 2001, Appendix Q)-in the North Fork Malheur River Geographic Management Area (NFMGMA).

1.2 Location of Proposed Action

The NFMGMA is located on the western boundary of the Vale BLM District (Map 1). The GMA includes the allotments and public land acres as shown below:

Table 1. NFMGMA Allotments and Public Land Acres

Allotment Number	Allotment Name	Total Acres of Public Land Within GMA Boundary ¹
00161	Agency Mountain	3,966
10204	Allotment #6	6,667
10217	Beulah	11,973
00109	Bridge Creek West	40
10212	Butte Tree	617
00162	Calf Creek	18,510
10211	Castle Rock	19,959
00225	Chukar Park	893
00226	Cottonwood Creek	853
10206	DeArmond-Murphy	35,978
00114	Ironside Mountain East	2,122
00112	Ironside Mountain West	1,050
00133	Kivett	243
00224	Lockhart Mountain	1,591
10219	Malheur River	781
10208	Ring Butte	385
00153	South Willow Creek	1,669
00233	Squaw Butte	289
10216	Whitley Canyon	16,091
Total Acres		123,677

¹ Does not include 6,856 acres currently located outside any allotment boundary but within the NFMGMA boundary.

1.3 Background

The alternatives for resource management considered in this Environmental Assessment (EA) were developed between April 2004 and August 2005, and modified in 2006 as a result of public comment received. The alternatives, which will influence nearly 124,000 acres of public land, were crafted based on consultation, cooperation, and coordination with livestock permittees and members of the interested public.

For National Environmental Policy Act (NEPA) purposes, this document is tiered to and incorporates by reference, the content of the “Southeastern Oregon Resource Management Plan Final Environmental Impact Statement” (SEORMP FEIS, April 2001), and “Southeastern Oregon Resource Management Plan Record of Decision” (SEORMP ROD, September 2002).

Resource data utilized in the assessment of the 1997 “Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington” (S&Gs) in individual pastures and allotments were summarized in 2003 and 2004 and fueled the crafting of alternatives for this EA. The “Affected Environment”

section of this EA provides resource information about the existing environment. The “Environmental Analysis” section of this EA serves as the evaluation of alternatives proposed in the EA.

1.4 Need for Proposed Action

Vale BLM has been assigned the task of renewing and reissuing all 10-year public land livestock grazing permits by October, 2009. As a prerequisite to permit renewal, BLM must first consider whether current permitted grazing use conforms to land use plan objectives described in the SEORMP ROD (2002), and the S&Gs (1997). Where current permitted use (e.g., numbers of livestock, seasons of use, and intensity of use) does not allow conformance with the legal requirements of the SEORMP ROD and the S&Gs, BLM must then seek administrative remedies through adjustments to grazing permits.

Because grazing permit renewal is a federal action subject to protest and appeal by permittees and the interested public, BLM needs to provide in this EA a clear explanation for its choice of authorized grazing systems and rangeland developments. In light of this grazing administration assignment, the purpose of this EA is to analyze the environmental and economic impacts of three management alternatives on BLM allotments included in the *North Fork Malheur Geographic Management Area Standards of Rangeland Health Determinations* (2003, 2004). The analysis will then provide the basis for decisions that issue new 10-year grazing permits.

Revised terms and conditions of grazing permits, including adjustment of grazing seasons of use and/or grazing preference may be necessary because within the NFMGMA upland sites, Forty-five pastures within 11 allotments did not meet the S&Gs due to current livestock grazing. Assessments completed in riparian areas rated 29% of all riparian areas in proper functioning condition (PFC), 36% functioning at risk with a trend of not apparent (FARN), 7% functioning at risk with an upward trend (FARU), 18% functioning at risk with a downward trend (FARD), and 10% nonfunctioning (NF).

In 2000 and 2001, the NFMGMA interdisciplinary team used a variety of information sources along with the professional judgment of senior staff specialists to conduct upland and riparian health assessments. The team consulted the best available rangeland vegetation and soils maps, and used agency-approved technical references and methodology, including protocols outlined in BLM Manual H-4180-1, “Rangeland Health Standards” (USDI BLM 2001) to draw conclusions about range health conditions. These assessments were used to determine if the S&Gs were being met. The Standards for Rangeland Health and Guidelines for Livestock Grazing Management on Public Lands in Oregon and Washington 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 - Uplands: 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 ground water quality, influenced by agency actions, complies with State water quality standards.
- Standard 5 – Native, Threatened and Endangered (T&E), 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.

1.5 Conformance with Land Use Plans

The proposed action is in conformance with the SEORMP ROD (2002). Environmental impacts associated with the proposed action for NFMGMA are consistent with impacts already disclosed and analyzed in the Proposed Alternative of the SEORMP FEIS (2001). Consequently, NFMGMA proposed actions also conform to the SEORMP ROD.

Proposed management actions and impacts to NFMGMA were not identified as specific line items in the SEORMP FEIS and ROD. However, management outcomes of the proposed action will clearly allow BLM to attain land use plan objectives described in the SEORMP ROD (pp. 28-111).

The SEORMP and ROD was crafted as an adaptive, outcome-based land use plan. This means that proposed actions are considered to be consistent with the SEORMP ROD when they conform to the Desired Range of Future Conditions (DRFC), meet stated land use plan objectives, and result in environmental impacts that do not exceed those analyzed in the SEORMP FEIS. The proposed action meets these outcome-based management criteria for the following program areas included in the SEORMP ROD (pp. 38-108):

1. Rangeland Vegetation
2. Forest and Woodlands
3. Special Status Plant Species
4. Water Resources and Riparian/Wetlands
5. Fish and Aquatic Habitat
6. Wildlife and Wildlife Habitat
7. Special Status Animal Species
8. Rangeland/Grazing Use Management
9. Recreation
10. Off-Highway Vehicles
11. Visual Resources
12. Areas of Critical Environmental Concern
13. Wild and Scenic Rivers
14. Wilderness Study Areas
15. Human Uses and Values
16. Cultural Resources
17. Land and Realty

1.6 Activity Plan Level Objectives

Activity plan level objectives appropriate to NFMGMA and identified in this section are consistent with Resource Management Plan Objectives identified in the SEORMP ROD (pp. 28-111) for Rangeland Vegetation, Forestry and Woodlands, Special Status Plant Species, Noxious Weeds, Rangeland/Grazing Use, Water Resources and Riparian/Wetlands, Soils, Biological Crusts, Fire and Fuels Management, Fish and Aquatic Habitats, Wildlife and Wildlife Habitats, Special Status Animal Species, Cultural and Paleontological Resources, Recreation and Visual Resources, Special Management Areas, Energy and Mineral Resources, Lands and Realty, and Human Uses and Values. These objectives provide a framework for BLM to use as Decision Factors in the evaluation of the cumulative effects of each alternative.

NFMGMA RANGELAND VEGETATION OBJECTIVE: Maintain ecological function and health of vegetation communities. This would be evidenced by overall trend as indicated by photo-plot, line intercept, and professional judgment determinations, for vegetation communities in healthy ecological condition and with a not apparent/static or upward trend designation.

NFMGMA SPECIAL STATUS PLANT SPECIES OBJECTIVE 1: Maintain or increase population numbers of one List 2 special status plant species. The selected species, “porcupine sedge”, is found in Dogwood Pasture along the North Fork Malheur River.

NFMGMA SPECIAL STATUS PLANT SPECIES OBJECTIVE 2: Continue to inventory for “Oregon princesplume,” which occurs within the NFMGMA on land managed by the Bureau of Reclamation, and maintain or improve population numbers where found.

NFMGMA FOREST AND WOODLANDS OBJECTIVE: Restore productivity and age structure in quaking aspen stands, and reduce the dominance of western juniper outside of old-growth western juniper woodlands.

NFMGMA RANGELAND/GRAZING USE OBJECTIVE: Provide for a sustained level of livestock grazing consistent with other resource objectives and public land use allocations.

NFMGMA WATER RESOURCES AND RIPARIAN/WETLAND AREAS OBJECTIVE 1:

Maintain ecological function and health of vegetation communities. Increase streambank stability through increase of riparian species that provide a root matrix for holding soil particles together. Make progress toward increasing bank stability to >80 percent, synonymous with stable banks Inland Native Fish Strategy (INFISH) Riparian Management Objective 1. Attain an upward trend in the following indicators:

- Stream meanders are increasing
- Incised channels are healing with vegetation cover

NFMGMA WATER RESOURCES AND RIPARIAN/WETLAND AREAS OBJECTIVE 2: Decrease stream channel width/depth ratio (same as INFISH Riparian Management Objective 2), such that water depth is increasing and stream channel width is narrowing.

NFMGMA WATER RESOURCES AND RIPARIAN/WETLAND AREAS OBJECTIVE 3: Increase streambank shade through the improvement of riparian/wetland areas that support desired shade-providing riparian herbaceous and woody species. Stream temperatures in perennial reaches will have no measurable increase (same as INFISH Riparian Management Objective 3) using increases in height and volume of streambank-shading canopy as a surrogate indicator of lower stream temperatures.

NFMGMA WATER RESOURCES AND RIPARIAN/WETLAND AREAS OBJECTIVE 4: Increase abundance and diversity of desirable woody and herbaceous riparian vegetation by attaining upward trends in the following indicators (same as INFISH Riparian Management Objective 4):

- At sites with ecological potential for woody vegetation, increase the overall number, species diversity, and canopy volume (height and width) of key woody plants.
- At sites with ecological potential for woody vegetation, acquire healthy uneven-aged stands of key woody plants.
- Increase the overall surface area of herbaceous ground cover.
- Shift herbaceous species composition toward late-succession species, such as Nebraska, beaked, or aquatic sedge, replacing xeric-adapted species such as Baltic rush.

NFMGMA FIRE AND FUELS OBJECTIVE: Improve the Fire Regime Condition Class (FRCC) within the NFMGMA, consistent with other resource objectives.

NFMGMA FISH AND AQUATIC SPECIES AND HABITAT OBJECTIVE 1: Emphasize aquatic species of management importance in NFMGMA. Identified species are bull trout, redband trout, Columbia spotted frog, western toad, long toed salamander, common garter snake, and western pearlshell mussel.

NFMGMA FISH AND AQUATIC SPECIES AND HABITAT OBJECTIVE 2: Because healthy and productive riparian areas are integral to functioning of aquatic habitats, manage stream and wetland habitats in accordance with NFMGMA Riparian/Wetland Areas Objectives 1 through 4, above.

NFMGMA TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT OBJECTIVE 1: Emphasize terrestrial species of management importance in NFMGMA. Identified species are: Brewer's sparrow, horned lark, western meadowlark, black-throated sparrow, sage sparrow, loggerhead shrike, greater sage-grouse, sage thrasher, northern bald eagle, northern goshawk, pileated woodpecker, white headed woodpecker, pine grosbeak, pygmy rabbit, pronghorn, mule deer, and northern sagebrush lizard.

NFMGMA TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT OBJECTIVE 2: Provide quality riparian habitat for terrestrial wildlife, consistent with site potential and capability.

NFMGMA TERRESTRIAL WILDLIFE AND WILDLIFE HABITAT OBJECTIVE 3: Management of Temporary Non-renewable (TNR) livestock grazing use authorizations.

- Allow for periodic fall TNR grazing use authorizations in crested wheatgrass or other exotic perennial grass seedings. To protect wildlife values, livestock utilization of fall green-up is allowed as long as it does not exceed 40% by key forage plant method estimates.

- In NFMGMA native rangelands, protect herbaceous forage, cover, and structure values important to terrestrial wildlife by denying requests for TNR grazing.

NFMGMA CULTURAL RESOURCES OBJECTIVE 1: Protect and conserve cultural and paleontological resources.

NFMGMA CULTURAL RESOURCES OBJECTIVE 2: Consult and coordinate with American Indian groups to ensure their interests are considered and of that their traditional religious rites, landforms, and resources are taken into account.

NFMGMA RECREATION OBJECTIVE: Maintain and provide for improved facilities at existing developed recreation sites, construct new recreation sites described in the SEORMP ROD. Provide diverse opportunities for dispersed recreation activities and quality outdoor recreation experiences, while protecting resource values.

NFMGMA VISUAL RESOURCES OBJECTIVE: Within Visual Resource Management (VRM) areas classified in the SEORMP ROD, manage existing facilities, and allow new facilities and management activities that meet VRM class objectives.

NFMGMA WILD AND SCENIC STUDY RIVER (WSR) OBJECTIVE: For the administratively suitable segment of the North Fork Malheur River, provide interim management protection of the study river's Outstandingly Remarkable Values (ORVs) of scenery, recreation, fish and wildlife, in accordance with guidance for a tentative "wild" river classification.

NFMGMA WILDERNESS STUDY AREA (WSA) OBJECTIVE: Manage the Beaver Dam Creek WSA and Castle Rock WSA in accordance with the BLM's WSA Interim Management Policy (IMP), to protect and enhance wilderness characteristics and not impair the WSA's suitability for preservation as wilderness.

NFMGMA AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) OBJECTIVE: Manage the Castle Rock ACEC (Area of Critical Environmental Concern) and North Fork Malheur River ACEC, where relevance and importance criteria are met, and special management attention is required to protect the values identified.

NFMGMA ENERGY AND MINERAL RESOURCES OBJECTIVES 1, 2, AND 3: Provide opportunities for exploration and development of leasable energy and mineral resources while protecting sensitive resources. Provide opportunities for exploration and development of locatable mineral resources while protecting other sensitive resources. Provide for public demand for saleable minerals from public land while protecting sensitive resources.

NFMGMA LANDS AND REALTY OBJECTIVE: Retain public land with public and high resource values. To ensure effective administration and improved resource management in Zone 1 lands (retention/acquisition), consolidate public landholdings and acquire land or interests in land with public and high resource values.

NFMGMA HUMAN USES AND VALUES OBJECTIVE: Manage public land and pursue partnerships to provide social and economic benefits to local residents, businesses, visitors, and future generations.

1.7 Adaptive Management

Adaptive management, as defined in the NFMGMA analysis and SEORMP ROD (2002), is a continuing process of planning, implementation, monitoring and evaluation. The process emphasizes results and makes adjustments when an evaluation of monitoring data indicates resource need. A continual feedback loop based on new information allows for mid-course corrections to management prescriptions and underlying assumptions in order to meet planned goals and objectives. Changes within the scope of that analyzed within this EA may be authorized when based on resource management prescriptions defined in the EA and are consistent with the identified resource objectives. Through periodic adjustment of management strategies, supported by monitoring and by additional information, adaptive management will result in attainment of short and long term objectives. Adaptive management provides the capability to respond quickly to monitoring data from past season monitoring and pre-season conditions. It can also be used as a model for adjusting goals and objectives, as new information develops. For further discussion of the

four components of adaptive management (planning, implementation, monitoring, and evaluation/assessment) see SEORMP ROD (pp. 28-111).

1.8 Chronology of Meetings for NFMGMA

Initial public meeting (includes Tribal Consultation) - Vale, Oregon, 04/26/2000

Initial public meeting - Juntura, Oregon, 06/29/2000

USFS Coordination Meeting - Prairie City, Oregon, 07/26/2000

Two-day training course offered to livestock permittees and the public on "Assessing Proper Functioning Condition" (PFC) of Riparian/Wetland Areas - Ontario, Oregon, 06/21/2001

PERMITTEE MEETINGS

Summary and Determination meeting with operator #3603038 - 04/23/03

Summary and Determination meeting with operators #3603105 and #3603118 - 11/19/2003

Summary and Determination meeting with operators #3603103, #3603102, and #3603128 - 11/20/03 and 04/21/03

Summary and Determination meeting with operator #3603026 - 04/25/2003

Summary and Determination meeting with operator #3603130 - 04/24/2003

Summary and Determination meeting with operator #3603215 - 04/24/2003

Summary and Determination meeting with operator # 3603151 - 01/18/2005

Summary and Determination meeting with operators #3603103, #3603102, and #3603128 - 01/18/2005

Summary and Determination meeting with operators #3603105 and #3603118 - 01/21/2005

Summary and Determination meeting with operators #3603154, #3603431 and #3603430 - 01/27/2005

Grazing schedule meeting with operators #3603103, #3603102, and #3603128 - 01/4/2005

Grazing schedule meetings with operators #3603105 and #3603118 - 04/11/2005, 04/6/2005, 04/13/2005

Grazing schedule meeting with operators #3603431 and #3603154 - 12/15/2005

Grazing schedule meeting with operators #3603430 and #3603154 - 09/30/2005

Grazing schedule meeting with operators #3603102 - 9/26/2006

Grazing schedule meeting with operators #3603154 - 10/24/2006

Grazing schedule meeting with operators #3603430 and #3603154 - 11/29/2006

Grazing schedule meeting with operators #3603118 - 11/30/2006

Grazing schedule meeting with operators #3603118 - 11/30/2006

Grazing schedule meeting with operators #3603154 - 12/18/2006

Grazing schedule meeting with operators #3603431 - 12/20/2006

Grazing schedule meeting with operators #3603102 - 12/20/2006

Grazing schedule meeting with operators #3603431 - 01/12/2007

Grazing schedule meeting with operators #3603431 - 01/16/2007

Grazing schedule meeting with operators #3603431 - 01/26/2007

Grazing schedule meeting with operators #3603118- 01/30/2007

Grazing schedule meeting with operators #3603102- 02/01/2007

Grazing schedule meeting with operators #3603431 - 02/02/2007

Grazing schedule meeting with operators #3603118- 02/09/2007

Grazing schedule meeting with operators #3603431 - 02/28/2007

Grazing schedule meeting with operators #3603431 - 04/19/2007

Grazing schedule meeting with operators #3603431 - 04/30/2007

Grazing schedule meeting with operators #3601553 – 05/15/2007

Grazing schedule meeting with operators #3601553 – 05/18/2007

FIELD VISITS (S&G ASSESSMENTS)

Allotment #6 with operator #3603151 - 6/27/00

Castle Rock Allotment with operators #3603105 and #3603118 - 08/16/00

Calf Creek Allotment with Russ Hursh (Malheur County Court) - 07/27/00

Beulah Allotment with operator #3603154 - 10/23/00

Beulah Allotment with operator #3603431 - 11/01/00

DeArmond-Murphy Allotment with operator #3603103 - 10/23/00

Calf Creek Allotment with operator # 3603430 - 09/24/2001

Castle Rock Tour with Tribal Elders - 05/17/2002

Castle Rock Allotment - 04/22/2003

2 DESCRIPTION OF ALTERNATIVES

In this section, BLM presents alternatives to meet management objectives identified in Section 1.6 of this document and to remedy resource management conflicts identified through the S&G process, as well as to present alternatives considered but eliminated from further analysis.

2.1 Alternative I – No Action

The “No Action Alternative” required by NEPA is represented by current management of the NFMGMA. Current management, as defined in 2000 and described in the SEORMP ROD (2002), would continue within the GMA.

This alternative incorporates the livestock grazing program decisions in the SEORMP ROD and existing allotment management plans (AMPs) into the EA, subject to evaluations and modifications. In the analysis of this alternative, current management is defined as those practices in place since 2003. Changes in livestock grazing practices required by the regulations (CFR 4180) would not be defined. Resource values or sensitive habitats would receive the same management emphasis that occurred during the year 2000.

Implementation of rangeland improvement projects and other activities would occur on a site-specific basis as needed, without considering the implications (positive or negative) of the action(s) on the interconnected parts of the GMA, including adjoining private land. Refer to the “North Fork Malheur Geographic Management Area Standards of Rangeland Health Determinations” (2003, 2004) for descriptions by allotment of authorized livestock use, pasture and allotment acres, and current livestock grazing schedules.

2.2 Alternative II – Proposed Action

This alternative was developed as a reasonable, multiple-use option by the Malheur Resource Area (MRA) interdisciplinary team (IDT) and affected interests. Under this alternative, management actions would result in natural resource protection and improved ecological conditions, while providing for commodity production.

Riparian resources would be managed with emphasis on grazing season of use adjustments. Some riparian resources would be protected by new pasture boundary fences and riparian enclosure fences. Land treatments such as brush beating, prescribed fire, seeding, noxious weed control through herbicide application and biological control methods, and western juniper cutting, would increase the acreage of grassland communities in the short-term while providing for the maintenance and enhancement of shrublands and forestlands in the long-term.

In addition, new livestock grazing 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. It is the intent of the livestock grazing management program to leave sufficient herbaceous material in most areas to provide soil and watershed protection, to provide forage and cover for wildlife, and to meet other resource objectives.

For the above reasons, the majority of the recommendations enable more effective livestock management. To further protect sensitive resources and focus on resource needs, specific forage utilization levels and livestock season and duration of use would be prescribed on a pasture-by-pasture basis and would follow recommendations found in Appendix R, “Effects of Intensity and Season of Grazing” in the SEORMP ROD.

The proposed recommendations incorporate a variety of activities for which standardized descriptions and methods for implementation have been analyzed and adopted in the SEORMP ROD. The activities would include the following: (1) implementing new grazing management strategies for 18 allotments, (2) temporary voluntary non-use of livestock by some permittees, (3) constructing rangeland projects including new fence construction and reconstruction of existing springs in riparian habitats, (4) rehabilitation of uplands (including forest ecosystems) through vegetation treatment using prescribed fire, mechanical, chemical and biological control, and (5) various other follow-up monitoring, data collection and administrative activities, to be conducted during the course of the proposed activity plan.

Grazing schedules were developed for those pastures not meeting S&Gs during the rangeland health assessment. The revised grazing schedules are shown in Appendix C, "Alternative II Grazing Schedules." To implement some of the grazing schedules effectively, specific rangeland improvement projects were identified for construction beginning in fiscal year 2007. These projects have been prioritized and are critical to maintaining a grazing program while protecting resources. The list of proposed projects and their identified priority are shown in Appendix D, "All Projects." The project list is based on current resource conditions to meet stated objectives and is subject to additions or deletions, as resource conditions and budget warrant.

In this alternative, maximum allowable utilization levels would be "light" (21%-40%) for native pastures grazed in the spring season (March through June) and for pastures with downward upland trends as identified by the assessment data. All native pastures showing a static or upward trend, and areas located outside of a two-mile radius of a known sage-grouse lek, would be grazed at a maximum allowable utilization of 50%, which is in the 41%-60% "moderate" range. Native pastures grazed within a two-mile radius of a known lek would retain "light" utilization levels. Non-native seedings with static or upward trends would have a maximum allowable utilization of 50%. Non-native seedings with downward trend would have a maximum allowable utilization of 40%. Pastures with riparian concerns would have a 30% maximum allowable utilization of current year's growth of woody riparian vegetation (as determined by Cole Browse methodology), and a minimum allowable herbaceous riparian vegetation stubble height of 4-6 inches. The riparian stubble height may need to be adjusted upward depending on the geology and hydrology of individual riparian systems. Pastures within identified big game wintering areas would have a 30% maximum allowable utilization of current year's growth of bitterbrush, aspen, and mountain shrubs (as determined by Cole Browse methodology).

Lands treated by mechanical means would be rested from grazing until after seed-ripe of key perennial herbaceous species the following year. Areas treated with fire (other than pile burning) would be rested for a period of no less than 2 full years, or until sufficient recovery of perennial herbaceous species had occurred. Old-growth western juniper would not be treated. Within Visual Resource Management (VRM) class I areas and certain locations within VRM class II areas, mechanical western juniper treatments would require cutting western juniper flush to the ground to minimize visual impacts. There would be no land treatments within that portion of Beaver Dam Creek WSA within NFMGMA. Within the Castle Rock WSA, vegetation treatment would be limited to prescribed fire for management of western juniper.

Areas of western juniper encroachment were identified in Alternative II utilizing "NFMGMA Standards of Rangeland Health Determinations" (2003, 2004) field data, evaluation data, and Geographic Information System (GIS) data. The driving factor for treatment area identification is the desire to promote vegetation community progress toward the DRFC identified in the SEORMP ROD as follows:

Western juniper dominance is limited to rock outcrops, ridges, mesas, or other sites where wildfire frequency is limited by site productivity. Western juniper generally occurs in low densities in association with vigorous shrub, grass, and forb species, consistent with site potential. Historic western juniper sites retain old-growth characteristics.

Priority treatment areas in this alternative are identified so that the greatest benefit is realized with minimum input of expenditure and resources.

- Priority 1 areas consist of western juniper encroachment within a two-mile radius of a known sage-grouse lek. These areas were also identified in the NFMGMA evaluation as deviating from site potential due to juniper encroachment.
- Priority 2 areas consist of lands that were identified solely to remedy issues associated with deviation from site potential as a result of western juniper invasion, but are expected to progress toward desired conditions more quickly than areas in Priority 3, with minimal cost or dedication of resources and staffing. Examples of such areas include mountain big sagebrush communities, mountain mahogany and bitterbrush communities, aspen communities, and pine forests.
- Priority 3 areas consist of areas of western juniper invasion that will require greater input of funds and staffing but also exhibit indicators of degradation due to juniper encroachment. Examples of this type of area are Wyoming big sagebrush communities and areas lower in elevation that may require seeding after treatment.
- Priority 4 areas consist of vegetation communities such as Wyoming big sagebrush/cheatgrass communities that would require the greatest input of funds and staffing.

Due to staffing and funding constraints, over the life of the plan (approximately 10 years), treatment of western juniper in this alternative would not exceed 20,000 to 50,000 acres. Individual treatments within identified areas would be consistent with the activity plan objectives outlined in section 1.6 of this document.

2.3 Alternative III – Limited Grazing with Suspension of Use

Under Alternative III, livestock grazing would be suspended and no grazing use would occur in 45 pastures within 11 allotments (Table 2, “Allotments/Pastures Not Meeting S&Gs, caused by Current Livestock Grazing Practices”) where S&Gs were not met, and current livestock grazing (as assessed in the year 2000) was determined to be the primary cause. Use would be suspended for a minimum of 3 years or until monitoring showed resource conditions are moving toward meeting the standards as defined in the S&Gs and the SEORMP ROD Objectives (pp. 28-110). Resumption of livestock grazing after the period of suspended use would follow schedules proposed in Alternative II.

Under this alternative, livestock grazing would occur in those pastures that met the S&Gs. Grazing schedules, forage utilization levels, and season of use in those pastures where grazing use is not suspended would be similar to Alternative II-Proposed Action.

Projects constructed with implementation of Alternative III are shown in Appendix D “All Projects” and would be similar to Alternative II with the exception of western juniper treatments. The priority of implementing vegetation manipulation projects (e.g., prescribed fire in communities dominated by western juniper, and seeding in cheatgrass range) would be unchanged in order to achieve S&Gs in vegetation communities dominated by woody or annual species. The priority of implementing structural rangeland projects (e.g., pasture division fences and water developments) in pastures which meet or are progressing toward meeting S&Gs would also not differ from the Proposed Action, since the purpose of many of these projects are to accelerate progress toward meeting S&Gs or meeting management objectives. The priority of constructing projects in pastures where S&Gs are not met, or where substantial progress has not been made toward S&Gs, would differ from the Proposed Action in that these projects would not be necessary until progress toward meeting the S&Gs had been attained through livestock exclusion. Structural project construction in pastures where livestock are temporarily excluded would become a priority once the decision was made to reintroduce livestock grazing.

Table 2. Allotments/Pastures Not Meeting S&Gs, Caused by Current Livestock Grazing Practices.

Allotment	Pasture	Acres	BLM Acres	AUM	Suspended AUM	3 year Suspended	Available AUM
Agency Mountain	Agency Mountain	2,299	1,834	1,400	0	483	917
	Reservoir Field	786	107				
	Total	3,085	1,941				
Allotment 6	Juniper Gulch	7,252	6,666	1,540	339	1,201	0
Beulah Reservoir	Antelope	3,743	1,517	1,982	0	1,509	473
	Lower Poverty	717	703				
	Upper Poverty	1,138	1,080				
	Moonshine	1,049	1,000				
	Jack Creek	2,025	2,016				
	Burnt Field	309	309				
	Scab	919	648				
	Little Seeding	151	93				
	Bennett	386	386				

Allotment	Pasture	Acres	BLM Acres	AUM	Suspended AUM	3 year Suspended	Available AUM
	Creek	1,126	270				
	North Homestead	2,146	1,348				
	McClellan	439	328				
	Total	14,148	9,698				
Butte Tree	Butte Tree	1,917	617	123	54	69	0
Calf Creek	Stemler Basin	4,173	4,140	2,370	0	2,367	3
	Dishrag	6,388	6,362				
	Cave Creek	551	545				
	Lake Ridge	3,980	3,672				
	Lower Calf Creek	1,678	809				
	Upper Calf Creek	829	741				
	Chalk Camp	2,247	2,210				
	Total	19,846	18,479				
Castle Rock	Castle Rock	4,131	3,940	4,816	0	3,433	1,383
	Clevenger Butte #1	1,515	1,505				
	Clevenger Butte #2	2,284	1,733				
	Duck Pond	1,691	1,451				
	House	2,281	1,154				
	Poison	1,424	1,387				
	Heifer	830	828				
	Hat Butte	3,126	2,115				
	Sheep Rock	1,813	1,500				
	Total	19,095	15,613				
Chukar Park	Chukar North	147	147	81	46	6	29
DeArmond Murphy	Castle Rock	10,578	9,821	6,503	0	4,017	2,486
	Beulah Seeding	1,697	1,531				
	Hunter Mountain	2,328	2,053				
	Hunter Creek	2,850	2,092				
	Morton	1,780	1,780				
	Earp FFR	2,477	1,202				
	School Section	835	435				
	Total	22,545	18,914				
Lockhart Mountain	Eastside	5,256	1,588	214	0	61	153

Allotment	Pasture	Acres	BLM Acres	AUM	Suspended AUM	3 year Suspended	Available AUM
Malheur River	Malheur River	997	578	170	117	53	0
Whitley Canyon	Pete's Mountain	5,446	3,984	2,376	0	856	1,520
	Dogwood	684	390				
	River Field	723	410				
	Total	6,853	4,784				
Total:		100,994	78,878	21,575	556	14,055	6,964
All other Allotments & Pastures -		136,562	51,655	763	253		
GMA total AUMs -		22,338					
GMA Existing Suspended AUMs -		809		GMA Cumulative Suspended AUMs -			14,864
GMA total acres -		237,556					
Percent of Total AUMs Proposed for Suspension -		62.9%		Percent of Total AUMs Cumulative Suspension -			66.5%
Total Acreage Proposed for Suspension -		100,994					
Total Acreage Currently being Grazed -		237,413		Active AUMs Available During Suspension -			7,474
Percent of Total Acreage Proposed for Suspension -		42.5%					
Number of Operators Impacted by Proposed Suspension -		11					

Western juniper encroachment areas in Alternative III were identified utilizing S&G field data, evaluation data, and GIS data. The driving factors for treatment area identification were proximity to known sage- grouse leks and the desire to promote vegetation community progress toward the following Desired Range of Future Conditions (DRFC) identified in the SEORMP ROD as:

Western juniper dominance is limited to rock outcrops, ridges, mesas, or other sites where wildfire frequency is limited by site productivity. Western juniper generally occurs in low densities in association with vigorous shrub, grass, and forb species, consistent with site potential. Historic western juniper sites retain old-growth characteristics.

Currently, western juniper expansion is affecting sage-grouse nesting habitat as well as migratory routes between lower elevation nesting and early brood-rearing habitats, and routes to upper elevation late brood-rearing habitats. Western juniper has reduced nesting habitat due to a reduction in the amount of sagebrush available through expansion into big sagebrush vegetation types. This expansion has most likely reduced overall productivity of sage-grouse.

The expansion of western juniper into nesting habitat has also affected the productivity of nesting hens by providing more perches for predators such as raptors and ravens. Ravens are effective nest predators that use perch trees to spot nests and prey upon the eggs. Western juniper expansion may also be affecting some lek sites by providing

raptor perches close to the strutting males, which could disrupt breeding occurrence and reduce the numbers of sage-grouse through predation.

In Alternative III there would be no treatment of western juniper within that portion of Beaver Dam Creek WSA within NFMGMA. In addition, within Castle Rock WSA, cutting would be limited to western juniper within Priority I treatment areas.

2.4 Alternatives Considered but Eliminated from Further Analysis

NO GRAZING

A "no grazing" alternative was initially considered for the entire NFMGMA area. However, because a "no grazing" alternative was previously analyzed and eliminated at the land use planning level under the SEORMP FEIS, this alternative was dismissed. The final SEORMP Record of Decision did not dedicate any grazed lands within the NFMGMA to a land use exclusive of grazing. Further, the SEORMP FEIS analysis clearly indicates that management objectives can be met with adjusted grazing, as indicated in the alternative selected in the final SEORMP ROD. Adaptive management processes, described in the SEORMP ROD and in this environmental assessment, allow for the adjustment of grazing (number of livestock, duration, season and/or intensity of grazing) to levels necessary to meet management objectives. Alternative III in this document analyzes "no grazing" in specific pastures where the S&Gs were not met due to current livestock grazing.

There is no indication that total elimination of authorized livestock use (no grazing) is necessary to meet management objectives at the land use plan level (SEORMP ROD) or at the activity level (NFMGMA). Since this alternative was explored and dismissed under the SEORMP FEIS, it was determined that it would not be a reasonable alternative to consider further in the NFMGMA.

SHORT DURATION/LOW INTENSITY GRAZING

In this alternative, livestock would be herded rapidly through the allotments with stops at various watering areas for short periods of 5 to 10 days. Most fences and pipeline systems would be removed. Most springs and reservoirs would be retained to provide water sources.

This alternative was eliminated from further study because livestock permittees considered the intense herding effort to be impractical. This level of herd management would be cost prohibitive.

EMPHASIZE COMMODITY PRODUCTION

This alternative emphasizes commodity production and extraction. Potential impacts to sensitive resource values would be mitigated on a case-by-case basis. This alternative would have the least restriction possible for the protection of sensitive resources within the limits of the law, regulation, and BLM policy. It was initially considered in the NFMGMA but was explored and dismissed at the land use planning level in the SEORMP ROD.

3 NFMGMA MANAGEMENT ASSUMPTIONS

3.1 Assumptions Common to All Alternatives

Best Management Practices (BMPs) as described in the SEORMP ROD Appendix O, “Best Management Practices”, would be followed for projects involving surface-disturbing activities, right-of-way and utility corridors, forest management, fire suppression, prescribed burning, livestock grazing management actions, mining, wildlife habitat protection, noxious weed management, and developed recreation. BMPs are designed to maximize beneficial results and minimize negative impacts of management actions. Interdisciplinary site-specific analysis may identify modifications necessary to minimize potential negative impacts.

Motorized vehicle access (Title 43 of the Code of Federal Regulations, subpart 8340.0-5) as described in the SEORMP ROD (Appendix I, “Off Highway Vehicle Use”), would be as follows: The authorization of the use of off-road vehicles may occur when (a) used in an official capacity, and (b) any vehicle whose use is when expressly permitted by the authorized officer or otherwise officially approved.

Therefore, the use of off-road vehicles may be authorized for implementing certain proposed actions in the NFMGMA. Refer to Section 7.2 of this EA for mitigation measures where such off highway vehicle (OHV) use is authorized or otherwise restricted.

3.2 Rangeland Vegetation

DESIRED RANGE OF FUTURE CONDITIONS (DRFC)

The dominant rangeland plant community throughout the NFMGMA is the sagebrush-grassland association that occupies approximately 100,000 acres. Based on public and internal comment to the Proposed SEORMP FEIS (2001), the DRFCs for sagebrush communities were redefined by the SEORMP ROD and are described in Appendix F, “Wildlife Habitat Descriptions and Considerations.” As a result, land management options under the SEORMP ROD are influenced by wildlife habitat requirements in Wyoming, basin, and mountain big sagebrush habitats. The long-term objective is to manage wildfire, prescribed fire, and land treatment disturbance so that at least 70% or more of Malheur Resource Area big sagebrush habitats support complex shrubland communities capable of sustaining greater sage-grouse and other animals that use those habitats.

The NFMGMA supports approximately 5,900 acres of forested habitats. The DRFC for forested land, as identified in the SEORMP ROD (p. 25), is to produce healthy stands of appropriate forest species including Douglas fir, ponderosa pine, and western larch. The long-term objective is to manage for open stands that are resilient to low-intensity fire with only normally expected levels of disease and insect infested trees, and to decrease the amount of Douglas fir, white fir, and grand fir where they were not historically maintained by the dominant fire regime (SEORMP ROD, p. 41). The forest objective includes provision for timber production where feasible and compatible with overall forest health. For quaking aspen stands, the DRFC is to manage aspen communities in their historic range and ensure that the stands are stable or improving in vigor.

The NFMGMA supports approximately 83,000 acres of western juniper intermixed with sagebrush-grassland and forested communities. The DRFC as identified in the SEORMP ROD (p. 25) for western juniper dominated lands is to limit western junipers to rock outcrops, ridges, mesas or other sites where wildfire frequency is limited by site productivity. In areas where western juniper encroachment or increased density is threatening other resource values, the long-term objective is to manage for low densities of western juniper in association with vigorous shrubs, grasses, and forb species, consistent with site potential. The objective calls for retention of historic western juniper sites and management for old growth characteristics on sites not prone to frequent fire. Appendix F of the SEORMP ROD also identifies considerations for wildlife in western juniper management.

The NFMGMA supports riparian habitat associated with approximately 75 miles of intermittent and perennial streams, and 66 spring and seep areas. The DRFC for riparian and streambank habitats is to manage for watershed protection to ensure stability and provide for capture, storage, and safe release of water appropriate to soil type, climate and landform. Specifically, the objective is to ensure that riparian/wetland vegetation structure and diversity are significantly progressing toward controlling erosion, stabilizing streambanks, healing incised channels, shading

water areas, filtering sediments, aiding in floodplain development, dissipating energy, delaying floodwater, and increasing recharge of groundwater. The objective also ensures that riparian/wetland vegetation is increasing in herbaceous ground cover and 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.

PHYSICAL AND PHYSIOLOGICAL IMPACTS OF LIVESTOCK TO UPLAND VEGETATION

Livestock impacts to upland vegetation are dependent on the season of use as it relates to timing of grazing during the growth cycles of plants. The SEORMP ROD (Appendix R, “Effects of Intensity and Season of Grazing”) lists in Table R-1 the “Approximate Growth Stage Dates for Key Species” by elevation, averaged over the entire SEORMP area of 4.6 million acres. These growth stage dates (phenological stages) are approximations that vary with elevation and climatic conditions, and need extrapolation for site-specific areas such as NFMGMA.

NFMGMA is relatively high in elevation with cooler temperatures than other areas within the Malheur Resource Area. Spring green-up in grasses and early forbs typically initiates in April but is subdued by cold soil temperatures and nighttime freezing often until after May 1 to May 15. The formation of floral structures (early boot stage) in key forage grasses normally begins sometime between May 15 and June 1 depending on local elevation and temperatures, and begins somewhat earlier for forbs. Peak of flowering (anthesis) in key forage grasses typically occurs between June 15 and July 7. Peak flowering in forbs takes place earlier, between May 15 and June 1. For key forage grasses, seed ripe (when hard seed is produced) and the beginning of dormancy normally occurs between July 15 and the first week of August.

The maximum allowable utilization limit is the highest utilization reading acceptable before livestock must be removed from a specific pasture. Pasture utilization data are gathered by averaging the percent use of key forage plant species observed along a transect. A key species is a plant that serves as a reliable indicator of range health and as a barometer for determining trends in community composition (i.e., toward or away from ecological site potential (USDI BLM 1996; Stoddart, Smith and Box 1955). Key forage species are palatable plants that are preferred and actively sought after by grazing livestock. They are grazed frequently and to greater intensities than other less palatable or less abundant plants. Because of its relative abundance and palatability, bluebunch wheatgrass is the dominant key forage species in the uplands of NFMGMA and supports the majority of grazing. Bluebunch wheatgrass dominates the herbaceous understory of Wyoming big sagebrush and upland basin big sagebrush communities and often is co-dominant with Idaho fescue, another key forage species, in low sagebrush and mountain big sagebrush communities. Although other plant species are present that may be used as key species and indicators of rangeland health, they are typically sub-dominant and tend to be more site-specific, less abundant, and/or less palatable. These species, which include bottlebrush squirreltail, various palatable forbs such as taper-tip hawk’s beard, clover, and other seasonally available plants, are not as useful as indicators of trend. Crested wheatgrass, a non-native perennial bunchgrass, is a key forage species where planted to increase forage production, e.g., as in Beulah Seeding and Big Seeding pastures.

In analyzing grazing impacts under each alternative, the physical and physiological effects on vegetation are considered in the context of the grazing season, grazing intensity, and the duration of grazing (which also bears on frequency of impacts). For all alternatives, the analysis of grazing impacts focuses on controlling the grazing intensity, duration of grazing, and/or the frequency of grazing, by season, in order to mitigate grazing impacts and sustain healthy, productive plant communities. An assortment of rangeland studies and texts were consulted during this analysis including Blaisdell and Pechanec 1949; Stoddart et al. 1955; Wilson, Harris and Gates 1966; Donart 1969; Cook and Child 1971; Heady and Bartolome 1977; Mueggler 1967, 1970, and 1975; and Clark, Krueger, and Bryant and Thomas 1998.

Control of grazing intensity, duration, season of use, and frequency of use, with consideration given to their combined effects on plant morphology, physiology, and phenological development, may be used to effectively mitigate grazing impacts on forbs and grasses. The same is true for impacts on shrubs such as antelope bitterbrush, which is prevalent in NFMGMA. Sagebrush species are not particularly palatable or sought after by livestock and would not be noticeably affected by grazing.

3.3 Rangeland Project Design and Construction Elements

If BLM chooses to apply chemicals to invasive plants, a Pesticide Use Proposal (PUP) would be written before any application would be initiated. The PUP document would fully analyze the potential array of chemical products to be used, as well as their expected impacts to the environment. This EA will only analyze the relative merits and risks of chemical control as compared to prescribed fire and mechanical methods. Because of ongoing litigation, BLM may only apply chemicals to rangelands where there are invasive plant problems; chemicals cannot be used for the purpose of sagebrush or western juniper control.

Rangeland projects and improvements are proposed and completed as part of adaptive management implementation to help reduce resource management conflicts and to achieve multiple use management objectives. Design elements have been standardized over time to mitigate impacts encountered during project installation. The standards and design elements from the SEORMP ROD Appendix S (“Standard Implementation Features and Procedures for Rangeland Improvements”), and BLM Manual Handbook H-1741-1 (USDI BLM, 1989), will be used in constructing rangeland projects within the planning area. For all interior pasture division fencing a 3-strand fence design would be used, while riparian enclosures would consist of a 4-strand fence design. Both types of fences would be constructed to not restrict wildlife movements. A smooth bottom wire no lower than 16 inches and a top wire not exceeding 38 inches above ground would allow antelope to go under the fence and mule deer and elk to go over it.

Land treatments would be conducted in such a way that sagebrush shrub-cover leave-areas would remain within the perimeter of proposed treatment areas. Temporary fencing around all vegetation treatment projects would be required within pastures open to grazing, unless the affected permittee agrees to rest the treated pasture(s).

Western juniper treatments would include the application of prescribed fire, mechanical methods, or a combination. Priority areas for treatment exhibit characteristics of Phase I and II woodland development (Miller, Bates, Svejcar, Pierson, and Eddleman 2005) where western juniper density is increasing and community composition is tending away from the DRFC. Priority areas also include mountain shrub and sagebrush steppe habitat at risk and in portions of the NFMGMA where habitat conditions can be improved for wildlife with the least monetary and staff input. Western juniper within existing aspen stands would be removed as funding becomes available. In big game winter range, some stands of western juniper would be retained for thermal and escape cover. In the Castle Rock WSA, no specific prescribed burn would exceed 320 acres within potential sagebrush-grassland rangelands. Where western juniper treatment involves cutting, some downed woody debris would remain unburned for wildlife cover, except within the North Fork Malheur Study River interim management corridor where individual downed trees would be either burned on site or removed from the corridor. Old growth western juniper sites would not be treated and would be identified at the project level by growth form and site conditions. Western juniper encroachment into spring areas would be treated when existing spring projects are updated and moved outside of riparian areas.

Western juniper treatment methods would include some or all of the following project design elements:

- Sage-grouse leks - Invasive western juniper would be aggressively treated within greater sage-grouse 2--mile lek buffers. Treatment methods would be limited to cutting and individually burning western juniper within the buffer area. No treatments would take place within the buffer area from March 1 to June 15.
- Big game cover - Within treatment units, hiding and thermal cover would be maintained.
- Bitterbrush - Western juniper would be treated mechanically in areas where bitterbrush is healthy and a major component of a site. Individual tree burning may also be used.
- Mountain Mahogany - Western juniper would be treated mechanically in mountain mahogany stands. Individual tree burning would occur within the Castle Rock WSA, and possibly in other areas as well.

3.4 Rangeland and Grazing Use

POTENTIAL ADJUSTMENTS IN GRAZING USE LEVELS

Compliance with policy, and direction for livestock grazing on public lands, follows the 2005 Code of Federal Regulations, 43 CFR 4180.2 (S&Gs). The authorized officer shall take appropriate action as soon as practical but not later than the start of the next grazing year upon determining, through assessment or monitoring, that a standard is not being achieved and that livestock are a significant contributing factor to the failure to achieve the standards and conform with the S&Gs.

The analysis of grazing impacts by alternative does not compare the effects of potential changes in levels of grazing use relative to permitted levels of use unless permitted use is the same as the current average actual use. Within allotments of the NFMGMA, there are permittees who have not made continuous and complete use of their permit. In these cases, a comparison of projected use to permitted use (which would be higher than the average actual use), would be a paper exercise and not informative regarding the direct and real impacts of a grazing operation. As part of the grazing decisions that will implement the selected alternative, grazing operations where permitted use substantially exceeds average actual use, will be addressed in accordance with administrative procedures contained in 43 CFR (Code of Federal Regulations) Part 4100 "Grazing Administration; Final Rule."

Under each alternative, any potential change from the existing average actual use reflects the direct loss or gain of available animal unit months (AUMs). The broader, indirect impact (or ripple effect) of a change in available AUMs on a grazing operation is much harder to quantify, particularly if the change is a substantial loss of available AUMs. The relative impact on a given operation depends on the severity of the reduction in number of AUMs and on how the reduction is made. Reductions and increases in grazing allocations are typically made by either changing the number of animals to be grazed or by changing the time available for grazing.

With a reduction in the number of animals, the impact of the loss of AUMs would be spread over the entire grazing season. The impact felt by the grazing operation would then be proportional to the severity of the reduction. However, if the reduction is made by cutting the time available to graze during a given year, then the relative impact on the operation would depend on the operation's ability to fill the time gap in the grazing season. The cost of filling the gap would be relative to the cost of alternative forage (such as hay or leased pasture), the cost of transporting livestock to and from alternate sources of forage, and the costs associated with care and feeding under those specific circumstances.

After implementation of the proposed alternative, subsequent grazing schedules and actions associated with authorizing livestock use may be revised through the adaptive management process.

GRAZING USE AND UTILIZATION

Grazing impacts to vegetation resources are a result of the utilization level, the season of use, and the duration of use. For the purpose of analysis, "slight" utilization is generally defined as up to 20 percent, "light" utilization as 21 to 40 percent, "moderate" utilization is defined as from 41 to 60 percent, and "heavy" utilization as 61 percent and greater. Although stocking rates are usually established to limit utilization to light or moderate levels, factors affecting livestock distribution create some areas where animals tend to concentrate that would be heavily utilized, while other areas may remain unused or only slightly used. For a full discussion of grazing intensity, season of use, and duration of use, refer to Appendix R, "Effects of Intensity and Season of Grazing," in the SEORMP ROD.

Upon reaching the maximum allowable pasture utilization limits proposed under each alternative, livestock would be moved to the next pasture identified in the pasture rotation. If the next pasture is outside of the planned season of use, livestock will be removed from the allotment and will not return until the planned season of use. If the maximum allowable utilization limit is reached in the last pasture scheduled for use prior to the end of the identified use period, livestock would be removed from BLM public lands within the allotment. This annual monitoring requirement may result in shortened use periods in years of decreased forage production, such as drought years.

For ease of operation, 4 days of flexibility in turn-out and gathering would be allowed in each pasture identified in a grazing schedule. This flexibility would allow for changes in use dates to accommodate climactic conditions and when maximum allowable utilization is reached in a pasture. Move dates outside of the 4-day allowance would be considered by BLM staff at the time of the request. Flexibility in livestock move dates will be allowed as long as the adjustments meet SEORMP and NFMGMA resource management objectives.

In community allotments, common grazing use among all pastures is permitted even though livestock operators have specific pastures and grazing systems identified for use. To balance AUMs when unforeseen conditions arise (such as wildfire), operators may utilize a portion of the available AUMs within another operator's area of use (with a proportional reduction in use by each operator, limited to the identified season of use for a given pasture), even though it may be outside of their scheduled use areas within an allotment.

Under drought conditions, Range Readiness Criteria (RRC) as identified in the following table may be used for flexibility of livestock turnout. The Range Readiness chart is established for key species at scheduled time of use, prior to grazing. Livestock grazing will not be scheduled prior to recognized use periods unless the following criteria are met.

Table 3. Range Readiness Criteria.

Species/Resource	Criteria
Crested Wheatgrass Seeding	Average 4 inches active growth with old growth present, or 6 inches active growth with no old growth present.
Bottlebrush Squirreltail	Average 3-4 inches active growth with old growth present, or 5 inches active growth with no old growth present.
Bluebunch Wheatgrass	Average 4 inches active growth with old growth, or 6 inches active growth with no old growth present.
Idaho Fescue/ Thurber's Needlegrass	Average 3-4 inches active growth with old growth, or 5 inches active growth with no old growth present.
Soils	Sufficient soil moisture to allow adequate regrowth on spring/fall ranges.
Stock Water	Pastures must have adequate stock water, or permittee must haul water.

Source: Malheur Resource Area Interdisciplinary Team, Vale District BLM, 2006

3.5 Allotment Boundary Adjustments

The “North Fork Malheur Geographic Management Area Standards of Rangeland Health Determinations” (2003, 2004), prescribes that public lands occurring outside of existing allotment boundaries would be incorporated into the appropriate allotment. These areas are mostly Fenced Federal Range (FFR) pastures where public lands constitute a small proportion of the fenced acreage.

3.6 Water Resources, Riparian/Wetland Areas, Biological Crusts and Soils

WATER RESOURCES AND RIPARIAN/WETLAND AREAS

Attainment, protection and maintenance of water quality standards, Proper Functioning Condition (PFC), and Riparian Management Objectives (RMOs) would be required in all Riparian Conservation Areas (RCAs). Based on current information for the NFMGMA, approximately 75 miles of streams and 66 developed spring and seep areas have RCAs. Surface areas of RCAs average between 5 to 10 acres per stream mile, which results in about 375-750 acres of RCAs associated with streams on public land in NFMGMA. Spring/seep areas in the NFMGMA average approximately 1/3 acre per site for a total of approximately 22 acres. Because saleable mineral development is not authorized within RCAs (SEORMP ROD, p. 37), adverse impacts to water resources and riparian/wetland areas would not occur.

Grazing schedules and actions associated with authorized livestock use would be developed and revised through the adaptive management process, where determined to be inconsistent with accepted riparian and water quality standards and practices. New road construction is limited only to necessary access roads for project maintenance once projects are implemented.

Implementation of any alternative would provide for increased recreational use by providing additional recreational sites or expanding existing areas to meet high public demand, address safety concerns, or for resource protection. Increased recreation use at developed sites and around water bodies would result in short-term adverse effects to water quality and to the maintenance, protection, and attainment of PFC and RMOs in RCAs. Causes of these short-term effects include improper disposal of domestic, horse, and other pack stock, and human wastes; increased soil compaction and sediment yield from camping areas, trailheads, access roads, and parking areas; and excessive seasonal or yearlong streambank and vegetation trampling and utilization. Dispersed recreation and use of undeveloped sites would have similar but lesser magnitude effects and would produce fewer impacts than parking areas and road use. Within RCAs, localized short-term impacts would occur from day-use areas and popular hiking trails that are well used and entrenched, contain compacted soil surfaces, and intercept overland flow that permits sediment transport to streams. When impacts from recreational use are identified, appropriate actions would be

implemented to prevent further degradation and promote improvement. The application of recreation BMPs would reduce adverse effects to water quality and riparian/wetland areas.

Recovery rates (attainment of objectives) necessary for water quality, PFC, and RMOs in riparian/wetland areas in Alternatives I, II and III would depend on the management emphasis of that alternative. All management options (e.g., grazing systems and enclosure fencing) would be available for use, if consistent with the management emphasis of that alternative. However, those management options that best address the theme of that alternative may be utilized more often than others may.

In Alternative I (No Action), management would continue as is. Streams spring/seeps, and RCAs would remain in their current condition. Most likely, downward trends would continue where they are presently occurring. Riparian and water resources would improve only if site-specific changes were addressed individually.

In Alternatives II and III, the attainment of objectives within streams and RCAs would likely be greater than Alternative I as a result of enclosure fencing or changes in grazing schedules. Although recovery within streams and RCAs would be in a positive direction, attainment of objectives would occur at a slower rate than the near-natural recovery rate expected if no commodity use or impacting activity occurred. However, a slower rate of riparian recovery at a landscape scale does not necessarily translate to a slower rate of recovery at a specific site within a given stream or RCA. Site-specific variables, which include management priorities, current resource conditions, landform, and microclimate, could influence management actions implemented at that site. For instance, to manage a particular wetland, enclosure fencing may be used in addition to modification of the grazing system. As a result, with implementation of Alternative II and III, water quality, PFC, and RMOs at specific sites may be attained at a rate equal to a near-natural rate of recovery, while across the landscape rates of recovery may be slower.

BIOLOGICAL CRUSTS

Approximately 95% of the sites evaluated in the GMA contained zero to 1% biological crusts, including the reference areas. Therefore, biological crusts are not prevalent in the NFMGMA. In general, at higher elevations, greater vascular plant cover precludes crust growth (USDI USGS 2001). Vegetation in the NFMGMA consists of high densities of western juniper, large forested areas, and dense communities of vascular plants.

Crusts on all soil types are least vulnerable to disturbance when soils are frozen or snow covered. Winter grazing most closely replicates the grazing strategy of native herbivores, which use more productive, higher-elevation sites during the summer and lower-elevation sites in winter. Implementation of rest/rotation strategies that minimize frequency of surface disturbance during dry seasons and maximize periods between disturbances would reduce impacts to biological crusts. Proposed management actions would aim at improving upland and riparian vegetation through utilization limits and grazing season of use. The management actions in Alternatives II and III would have the greatest benefit to biological crusts.

3.7 Aquatic Species and Habitats

Management activities that improve vegetation in uplands and in riparian areas are assumed to decrease spring or storm event flows, increase channel stability and shading, and reverse the negative effects of excessive runoff on aquatic habitat. Analysis based on effects on stream habitat is also representative of the effects on lake or reservoir habitat.

Effects of water quality management plans or total maximum daily loads (TMDLs) on fish habitat under all alternatives are expected to be negligible or positive. The required management would not differ by alternative. Management for the proposed WSR corridor of the North Fork Malheur River would result in continued protection or enhancement of the river. Short- and long-term effects would most likely be positive for fish resources within designated corridors, for all alternatives.

BLM actions that affect special status aquatic species, such as bull trout and Columbia spotted frogs, would involve a process that includes consultation, cooperation, and coordination with the U.S. Fish and Wildlife Service (USFWS) and Oregon Department of Fish and Wildlife (ODFW). Impact analyses that follow assume land uses will conform to management guidance in existing conservation agreements and biological opinions (BOs),

negotiated with the USFWS. Within bull trout streams, site-specific restrictions imposed on livestock grazing by USFWS’s BO should confer long-term protection and benefits to trout populations.

No saleable mineral activity would be permitted in Riparian Conservation Areas.

3.8 Wildlife and Wildlife Habitats/Special Status Terrestrial Species

Shrubland and grassland threshold objectives for NFMGMA wildlife discussed in this EA are calculated on the basis of the best available survey data, which indicate that approximately 104,000 acres of NFMGMA are comprised of Wyoming, mountain, and basin big sagebrush communities. This figure is used as the basis for calculating cumulative effects impacts of land treatment and wildfire in NFMGMA alternative analyses.

The SEORMP ROD Appendix F (“Wildlife Habitats and Considerations,”) directs BLM to practice multiple spatial scale management of Wyoming, basin, and mountain big sagebrush communities at the activity plan level, in order to conserve habitats important to greater sage-grouse and other animals that occupy sagebrush habitats. Multiple scale management means the agency will consider habitat character for wildlife at the Resource Area, GMA, and pasture level and then prescribe management based on those findings.

Appendix F of the SEORMP ROD states that, over the long term, 30% or less of Wyoming, basin, and mountain big sagebrush range sites in Malheur Resource Area should exist as grassland communities (Class 1 and 2 habitats as specified in Appendix F). Based on the best current information, these grassland habitat types will be distributed within MRA GMAs as shown in Table 4.

Table 4. Thresholds for Grassland Habitat Types by GMA within Malheur Resource Area.

GMA Assessment Priority	GMA	Estimated total public land acres with big sagebrush potential	Estimated percentage of total MRA potential sagebrush-steppe rangelands	Maximum allowable percentage of grassland allowed in Wyoming, basin, and mountain big sagebrush range sites, including wildfire and land treatments
1	Bully Creek	193,676	11.7%	15%
2	North Fork Malheur River	104,490	4.5%	25%
3	Dry Creek	366,702	22.2%	30%
4	Mainstem Malheur	184,533	11.2%	15%
5	Succor Creek	185,012	11.2%	50%
6	Owyhee	232,465	14.1%	15%
7	South Fork Malheur/Stockades	215,505	13.0%	25%
8	Sand Hills	91,249	5.5%	90%
9	Willow Creek	77,178	4.7%	50%

3.9 Recreation

The following developed recreation sites and improvements conform to decisions of the SEORMP ROD (Appendix U, “Potential Recreation Sites, Trails, and Improvements of Existing Sites”), and would be included in Alternatives I, II, and III.

Any developed trail between the Hunter Spring and Castle Rock recreation sites would be limited to segments needed to allow protection of important resource values or where needed for the safety of the hiking public. The specific route of this trail corridor would be determined under its project plan (tiered from this NFMGMA plan) and be subject to required resource clearances before being refined. Trailhead facilities at both Hunter Spring and Castle Rock recreation sites would be limited to placement of information bulletin boards to post appropriate safety and management information for the public. Due to the sensitive nature of Castle Rock as a significant American Indian landmark, this trail would be self-discovery and not advertised nor marketed by BLM as a destination.

The enclosure at Hunter Spring would be retained and enlarged into part of the adjacent corral’s enclosure area, but not into the corral itself. This would provide for a slight re-alignment, of fencing and the existing loop road would be rocked. As a change from the present indistinct four to five dispersed camping sites, up to 10 designated camping sites would be constructed, each with a site marker, vehicle barriers, table, grill, and pull-in or pull-through parking pad. Some sites would provide tent camping. A vault toilet would be installed. The existing livestock water trough would be re-located farther from the adjacent loop road of the larger enclosure where dispersed camping presently occurs, to resolve user conflicts. No trash receptacles or potable water facilities would be provided. Weed treatment would take place. The site would be a “pack it in/pack it out” site, and include appropriate administrative signing.

In addition, at the site of the existing Castle Rock vault restroom, camping amenities would be provided for no more than 10 individual marked pull-in or pull-through camp sites, each with a table, grill, and parking barriers. The existing vault restroom would be replaced. The primitive-condition road in this popular camping area would be rocked, have a cattleguard installed, and would be expanded to provide access to the individual camping sites. Missing segments of fence defining the enclosure would be reconstructed, and fenceposts adjacent to the Castle Rock road would be made of natural materials. No trash receptacles or potable water facilities would be provided. The site would be a “pack it in/pack it out” site, and include appropriate administrative signing. Weed treatment would occur if found on the site. If the site meets bureau criteria, this recreation site would become a fee site.

Within the Horseshoe Bend enclosure, amenities would be provided to support a combination day-use and overnight camping recreation site. There would be no more than 10 marked pull-in sites provided, each with a picnic table, grill, and sufficient barriers to delineate vehicle parking and to protect the table and grill. A vault restroom would be provided, as well as a marked and barrier-enclosed day-use parking area for four to six vehicles for day use visitors of the hot springs. No improvements would be made on the river island where the primitive hot springs pool is located. A 300- to 600-foot long hiking trail would lead to the island; vehicle barriers would preclude vehicle travel on the trail. The existing entry road from US Highway 20 would be rocked to enhance year-round access, and a gate or cattleguard installed at the highway to accommodate temporary closure of the site, should circumstances dictate. Signs concerning safety and hazards would be placed at the primitive hot springs pool. No extensive development would be made to the hot springs. No trash receptacles or potable water facilities would be provided. Weed treatment would be provided. The area would be a “pack it in/pack it out” site, and would include appropriate administrative signing. If it meets bureau criteria, this recreation site would become a fee site.

The Chukar Park Recreation Site enclosure would be retained with its current varied amenities, including 18 individual day-use and camping sites. The irrigated lawn areas would be retained. The site would remain a fee site with appropriate administrative signing. Improvements would include, but not be limited to developing three to five additional individual camp sites north of the two restrooms adjacent to campsite number four, should future use demands indicate their need; installing a septic system or gray and black water delivery system for the campground host site; replacing and, as needed, expanding potable and irrigation water lines; replacing the three existing older restrooms with two new vault restrooms; placement of vehicle barriers at the non-group camping and day-use sites; and improved parking for group use at the site’s upper (southern) elevation. Weed treatment would continue to be provided. Trash-cans would continue to be provided as long as maintenance budgets are able to support this service.

The small riverside pull-out located a quarter mile north of Chukar Park would be made available as an overflow area for campers. The existing short loop road would be rocked, although no camp site amenities or parking barriers would be provided. Weed treatment would continue to be provided. The area would be a “pack it in/pack it out” site and would include other appropriate administrative signing, including “No Campground Fires/Rings”(NCFR).

4 AFFECTED ENVIRONMENT

4.1 Topography/Climate

The NFMGMA varies from 3,000 feet in elevation near the town of Juntura to over 7,700 feet on Ironside Mountain. This GMA represents some of the more mesic conditions found in MRA due to a predominance of higher elevations and montane topography. The spine of mountains and hills representing the southern extension of the Blue Mountains captures considerable moisture in the form of snow and rain, primarily in the winter months. Annual precipitation varies from 25--30 inches at the higher elevations to 12-15 inches near Juntura at the lower elevations. Thundershowers typically occur between April and September. Temperatures vary from subzero during the winter months to over 90 degrees for short periods in summer.

4.2 Energy and Mineral Resources

The NFMGMA is situated on the southern edge of the Blue Mountains physiographic province where it grades into the Owyhee Uplands physiographic province. The Blue Mountains province is comprised of five major terranes that originated in an ocean environment to the west. Each terrane contains a distinctive assemblage of rocks and fossils. These terranes collided with the North American craton from the late Triassic through late Cretaceous time. The GMA is dominated by rocks of the Olds Ferry terrane, which is characterized by volcanic and sedimentary rocks associated with volcanic island chains or archipelagos similar to those in the north and western Pacific Ocean (Orr and Orr 1999). The lithologies most prominent in the NFMGMA are Jurassic and Upper Triassic sedimentary and volcanic rocks identified as olive-drab, pale-brown, dark-gray, and black volcanic graywacke and siltstone; lesser conglomerate and slate; and minor limestone and chert. Another distinct suite of rocks in the area are Cretaceous and Jurassic intrusive rocks characterized as a hornblende and biotite-quartz diorite (tonalite), trondhjemite, granodiorite, and small amounts of norite in batholithic masses and large dike-like bodies. Visible in the gravel deposits are upper and middle miocene welded tuffs and tuffaceous sedimentary rocks that are partly to densely welded vitric and vitric-crystal tuff of soda-rhyolitic, rhyolitic, and rhyodacitic composition that interfingers with, and grades laterally into, some non-welded ash-flow tuff and tuffaceous sedimentary rocks.

The Castle Rock area is of particular geologic interest due to the prominence of the outcrop and its visibility from great distances in northern Malheur County. Castle Rock is dominated on the west by rocks that are characterized as flows and flow breccia of basalt, basaltic andesite, and andesite, which includes restricted domal complexes and related flows and breccia of rhyolite and dacite (Thayer 1957, Brown and Thayer 1964). Potassium-argon ages are mostly in the range of 12 to 20 million years ago, correlating to the middle Miocene Epoch (Robyn 1977; Fiebelkorn, Walker, MacLeod, McKee, and Smith 1983). The eastern side of Castle Rock is characterized by mostly light-gray to red, dense, flow-banded, nonporphyritic and porphyritic rhyolite and dacite in nested domes, small intrusive bodies, and related flows. These rocks include some near-vent breccias, pumice-lapilli tuffs, and coarse pumicites. These lithologic sequences are commonly associated with mercury mineralization (Muntzert 1969, Muntzert and Field 1968).

The geographic area is structurally complex and is generally near the junction of several major fault zones and corresponding crustal lineaments. The northern portion of the GMA is bounded by the northwest-southeast trending Olympia-Wallowa lineament encompassing the north-northwest trending Vale (Adrian) fault zone and the northwest trending Snake River fault zone. Additionally, the east-west trending John Day fault zone may have added to the complexity of the bedrock structure in the area. Generally, the faults in the area have been determined to trend north to northwest, parallel to the Squaw Creek fault zone.

4.3 Air Quality

Air quality in the geographic area is good, with prevailing westerly winds. Airshed rating is Class II, and the National Ambient Air Quality Standards have not been exceeded, as monitored in the planning area. Dust and smoke occasionally impact air quality in the geographic area. Additional information related to climate and air resources is described in the SEORMP FEIS (2001, p. 29).

4.4 Rangeland Vegetation

UPLAND NATIVE VEGETATION TYPES AND PATTERNS

In 1977, a partial soil/vegetation inventory was conducted by BLM on public land within the geographic area (USDI BLM 1977). Soil and vegetation were classified based on soil depth, moisture, aspect, slope, and dominant grass, shrub and tree species. Vegetation types reflect a gradient of climate and soil from more arid desert and annual grass communities at lower elevations near Juntura to mesic, partly forested areas and aspen groves near and adjacent to Castle Rock and the North Fork Malheur River (Appendix A “Vegetation Types”, Tables A-1 and A-2). This inventory was general and, for example, did not distinguish between stiff sagebrush and low sagebrush community types on similar soils and topography, or between the extensive stands of mountain big sagebrush and the lower elevation Wyoming big sagebrush types. The 1977 inventory was supplemented with on-site observations during the S&Gs assessment process to identify small but important plant communities such as the stiff sagebrush type.

The overall NFMGMA is in an ecotone between the southernmost forests of the Blue Mountains and the vast sagebrush/bunchgrass vegetative types typical of the Great Basin. As a result, the varied mosaics of vegetation within the GMA create an unusually wide diversity of plant assemblages. Stands of coniferous trees, including ponderosa pine and Douglas fir, are restricted to the more mesic exposures, especially those facing north, northeast and occasionally east. Western juniper is the principle non-commercial conifer in the area and is rapidly increasing in density and extent. There are also thick stands of mountain mahogany occurring on rockland type sites with a scattering of pine and juniper. Much of the mountain mahogany occurs as dense, mature stands, forming an almost impenetrable barrier as many of these stands have become decadent.

Dominant plant species found on upland sites are listed in Appendix A, Table A-1, “Arid Vegetation Types”. A complete list of Vale District plants is on file at the BLM office. The relative amounts and mix of species within the NFMGMA vary based on soil type and depth, precipitation and historic use. Upland sites in degraded condition are often characterized by having (1) few to none of the large native bunchgrasses, (2) high densities and cover of big sagebrush, gray rabbitbrush and/or green rabbitbrush, (3) high densities and cover of exotic species such as cheatgrass, medusahead, bur buttercup, or whitetop, and (4) Western juniper encroachment.

RIPARIAN AND WETLAND VEGETATION

Inventories were conducted during the field assessments of 2000 and 2001 along most major drainages to locate riparian areas and assess their condition based on the S&Gs. Stream reaches in recovery or at PFC typically support tree species such as willow, quaking aspen, cottonwood and water birch or shrubby species including coyote willow, golden currant, mock orange, and Wood’s rose. Healthy riparian areas also contain several species of native grasses, sedges, and rushes. There are stream segments that have lost or are losing native vegetation, including shrub and aspen communities. Some riparian areas are being invaded by noxious weeds and other exotic species, indicating disturbed or nonfunctioning stream systems. A comprehensive list of riparian vegetation found in the GMA is on file at the BLM Vale District Office.

MODIFIED VEGETATION COMMUNITIES

During the 1960’s, the BLM initiated the Vale Project which proposed specific treatments for halting range deterioration (Heady and Bartolome 1977). Between 1960 and 1963, approximately 5,433 acres within the GMA were sprayed with herbicides to kill sagebrush and release native grasses or were seeded with crested wheatgrass (Table 5 “Vale Project Rangeland Treatments in NFMGMA”). Sagebrush has reestablished to varying degrees in all crested wheatgrass seedings in the GMA, and most of the treated areas have reduced perennial grass and forb understories. Other modified communities include areas where fire suppression has resulted in western juniper expansion onto range sites. Riparian communities have lost many aspen and willow stands. Reasons for these losses include reduced fire frequency and the encroachment of western juniper and exotic weeds as a result, in part, of historic heavy grazing of livestock and wildlife use.

Table 5. Vale Project Rangeland Treatments in NFMGMA.

Pasture	Type of treatment	Date	Acres
Horse Flat Brush Control	Spray	1963	2,773
Beulah Seeding	Plow and seed	1963	460
Agency Ridge Seeding	Burn and seed	1960	1,150
Poverty Flat Brush Control	Spray	1963	1,050

4.5 Forest and Woodlands

There are approximately 5,870 acres of forested land within the analysis area. These forest stands are predominantly Douglas fir/pinegrass and ponderosa pine/pinegrass forest plant associations. Other forest plant associations, represented at lesser occurrences, include Douglas fir/common snowberry, Douglas fir/mountain mahogany, ponderosa pine/common snowberry, ponderosa pine/mountain mahogany/elk sedge, and ponderosa pine/mountain mahogany/Idaho fescue-bluebunch wheatgrass. Historically, these plant associations were typically dominated by ponderosa pine with varying amounts of Douglas fir and to a lesser degree, western larch. Ponderosa pine is the climax species in all ponderosa pine associations, while in the absence of fire, Douglas fir becomes the climax in all Douglas fir associations.

The current conditions of stands in the Castle Rock area are greatly departed from historic conditions. Historically these stands were characterized by pure stands of open-growth, large diameter ponderosa pine with occasional Douglas fir and western larch. These stands of fire resistant species were maintained by frequent, low intensity fire. Excess regeneration, later seral species such as true fir, and fuels were routinely removed by low intensity “cleansing” fires. The larger, thicker barked, mature trees were left to flourish in a setting that had only minor inter-tree competition for water, light, and nutrients. This type of stand structure is representative of the classic late seral, or “old growth,” forest. Fire exclusion over the past century has disrupted this cycle, allowing prolific in-growth to occur, and the stands have become overstocked. While much of the relic old growth structure still remains, the current densely overstocked conditions have caused some large, old trees to die, and without considerable density management, the remaining old trees will likely succumb as well. This remaining old growth structure and the absence of stumps indicate that these stands have not been logged; thus, these stands provide a rare opportunity to improve forest health while retaining the original old growth characteristics.

Basal area, which is the cross-sectional area of all trees at 4.5 feet high on the boles, is a standard forestry sample measure of tree density. Cochran, Geist, Clemens, Clausnitzer and Powell (1994) have established recommended stocking levels for various plant associations, site characteristics, species, and tree size in the inland west. The stocking levels are expressed as upper (UMZ) and lower (LMZ) management zones to allow trees to grow to their full potential, while reducing the risk of infestation from insects and disease. Stand data acquired in the Castle Rock area indicate an average basal area of 122 square feet, while the UMZ and LMZ averaged for all the plant associations in the area are 64 and 44 square feet respectively.

Inter-tree competition for scarce resources has greatly increased in these stands due to the overstocking. With each passing growing season, the trees have become more stressed which predisposes them to bark beetle attacks. Throughout the Castle Rock stands there are numerous pockets of standing dead trees, as well as jackpots of down and dead trees. These pockets of mortality are evidence of repeated bark beetle attacks throughout the recent history of these stands. While bark beetles have always been an endemic component of forests, it was much less common historically for them to reach epidemic proportions and destroy stands than it is today. Historic fire return intervals kept tree numbers much lower, thus limiting the amount of stressed trees available for foraging and breeding by beetles. As tree stress continues to increase throughout these stands, so does the likelihood of a large-scale beetle epidemic.

In most of the analysis area, Douglas fir is an encroaching species due to lack of fire that would have killed regeneration prior to the trees reaching maturity. However, on some of the more mesic sites, Douglas fir is either dominant, or co-dominant with the pine, indicating that the sites are appropriately occupied by this later seral species. Unfortunately, the Douglas fir on these sites exhibits a severe infestation of dwarf mistletoe. Like the bark beetles, dwarf mistletoe is an endemic component of naturally occurring forests, and it provides benefits to some wildlife species in the form of nesting and forage habitat. The frequent fires that burned through the forest naturally kept this parasitic plant at lower, beneficial levels. The absence of fire has allowed dwarf mistletoe to flourish at

epidemic levels, with most, if not all, Douglas fir trees infected. This disease causes the crowns of infected trees to produce malformations known as “witch’s brooms”, which are a dense growth of branches and foliage that trap dead material that the tree has cast off. Eventually these witch’s brooms will either die or break off from the tree due to increased weight and become ready concentrations of ground or ladder fuel. Infected regeneration will never reach maturity and infected older trees will eventually die as the parasite spreads throughout the tree. Additionally, moderately to severely infected trees are under great stress, which greatly increases the likelihood of bark beetle attacks.

Western juniper is encroaching in all stands. Typically, this species was relegated to dry, rocky sites that were protected from fire due to a sparseness of fuels and lack of fuel continuity to carry fires to the sites. The disruption of the fire return interval has allowed this species to expand well beyond its historic range, a widespread problem throughout the arid west. This juniper encroachment has only added to the poor forest health condition of these stands. As with excessive conifer regeneration, juniper is competing with the overstory components of these stands and contributes to their stressed condition. Juniper, in conjunction with overstocked conifers of all size classes, has also displaced the historic understory community. This is evidenced by the lack of shrubs, grasses and forbs and the skeletal remains of mountain mahogany that has long since succumbed to suppression. This loss of understory components, particularly mountain mahogany, has decreased the area’s value as wildlife habitat.

Forest stands in the Ott Mountain, Little Malheur River, Bridge Creek and Ironside Mountain portions of the GMA are similar to those described for the Castle Rock area, with a few departures. Plant associations are similar with the exception of a subalpine fir community at higher elevations on Ironside Mountain. The other main difference has to do with varying stand structures attributed to varying slope positions and elevations, soil variations, human manipulation (logging) and fire occurrence.

While the stands on Castle Rock have not been logged (but have had some minor firewood cutting), most of the stands throughout the remainder of the analysis area have been logged to some degree. The primary type of logging has been selective cutting, which is also often referred to as “high-grading.” High-grading refers to the practice of removing individual trees or groups of trees that are the most valuable. What this means for many of these stands is that many of the large, old trees have been removed. While there are still many larger, older relic trees throughout these stands, in most cases there are not enough of them to meet the definition of old growth, which requires 10 trees per acre more than 150 years old (USDA 1993). Because relic trees were removed before they died, or have been salvaged since dying, there is a lack of large snags throughout most of these stands. Large snags are a key part of any forest community, and their absence indicates a forest health problem. Otherwise, these stands exhibit a similar range of structural characteristics as described previously.

Fire has also played a relatively recent role in terms of restructuring several of these stands. There are several areas, primarily near Ironside Mountain, that have sustained stand-replacing fires. As the term “stand-replacing fire” implies, most if not all trees were killed by fire, and either a new forest stand is growing due to natural or artificial regeneration processes, or the prior forest area is in an early stage of succession dominated by grass, forbs and shrubs. Where natural regeneration has occurred, the stand is dominated by Douglas fir; where artificial regeneration was used, the stand was successfully planted with ponderosa pine. In almost all stands throughout the analysis area, current conditions of overstocking, disease (primarily dwarf mistletoes), and insect damage leave these forests with an abundance of ground and ladder fuels making their susceptibility to stand-replacing fire very high.

NFMGMA supports some of the most extensive western juniper sites found in MRA. The species covers approximately three to 10 times the acreage covered 100 years ago (Karl and Leonard 1996). It has increased in distribution and density throughout its range, expanding into open meadows, grasslands, sagebrush steppe communities, quaking aspen stands, riparian/wetland communities and forestland. The presence of western juniper at high densities reduces herbaceous production, diversity and cover of associated plant species, reduces habitat for animal species dependent on those plant communities, and may increase soil erosion.

4.6 Special Status Plant Species

No species of plant proposed for listing, listed under the Endangered Species Act (ESA), or candidate species being considered for listing, are known to occur in this GMA. A special status sedge, porcupine sedge, was observed in

the fall of 2004 in the Dogwood Pasture of the Whitely Canyon Allotment, along the edge of the Malheur River in dense riparian vegetation. The sedge is on List 2 for plant species as compiled by the Oregon Natural Heritage Information Center (ONHIC). List 2 "...contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon. . ." (Oregon Natural Heritage Information Center 2004). The species, by virtue of its List 2 status in the state of Oregon, is considered an Assessment Species by the BLM and is to be monitored for population trends and stability. Other riparian habitats may reveal additional populations of this species in the GMA. No other special status plant species or habitats have been identified on BLM lands in the management area. However, comprehensive botanical inventories in the area have been minimal, in part due to observations that unusual habitats that frequently support rare plant species are generally lacking in the GMA.

Two small populations of Oregon princesplume were found on Bureau of Reclamation land near Beulah Reservoir in 2005. Neither population is managed by the BLM. This species is on plant species List 1 as compiled by ONHIC. List 1 "...contains taxa that are threatened with extinction or presumed to be extinct throughout their entire range." The species, by virtue of its List 1 status in the state of Oregon, is considered a Bureau Sensitive species by the BLM, and no management actions that would contribute to the need to list it under the ESA are to be authorized.

4.7 Noxious Weeds

Several annual noxious weeds, including cheatgrass, medusahead, Russian thistle, and numerous mustard species, are prevalent in the GMA particularly around ranches, old homesteads, and other high traffic areas. The biennial Scotch thistle is establishing in lower elevations, predominantly along road rights of ways (ROWs). Bull thistle, a biennial, and Canada thistle, a long-lived perennial, can be found in higher elevations and are generally associated with riparian areas, springs, seeps, and old, disturbed logging areas. Houndstongue is another biennial of concern that is spreading into the allotments.

Three knapweeds have very limited distribution along ROWs and hunters' camps. These are spotted knapweed, a biennial or short-lived perennial; diffuse knapweed, an annual or short-lived perennial; and Russian knapweed, a long-lived perennial. Spotted and diffuse knapweeds are listed in Malheur County as Class A weeds (defined in Table 6 "Weed Species") and as Class B by Oregon Department of Agriculture (ODA). Spotted knapweed is also on ODA's "T" list (targeted noxious weed), identified as an economic threat to the state, and proposed to receive priority treatment. Heart-podded whitetop and globe-podded whitetop, deep-rooted, long-lived perennials, are also known to be established within the GMA.

The perennials, Canada thistle, Russian knapweed, and both whitetop species are all deep-rooted plants that can spread by rootstalks and seeds. Whitetop is Class C listed by both Malheur County and ODA (Table 6). All knapweeds are high priority weeds in BLM allotments since the small areas impacted may be treated as they are found.

In 2002, a small infestation of the biennial Mediterranean sage was discovered near the dam on the Southeastern end of Beulah Reservoir. Mediterranean sage is county A-listed (Table 6) and state B-listed (Table 6).

Dalmation toadflax has been reported on private land near Beulah Reservoir and perennial pepperweed is establishing on private property adjacent to the reservoir. Both species are deep rooted, long-lived perennials that spread from the rootstalks and seeds. Dalmation toadflax is county A-listed, and pepperweed is county B-listed. Both are state B-listed.

Table 6. Weed Species1

CLASS "A" WEEDS
A weed species of known economic importance occurring in the county in small enough infestations to make eradication practical <u>or</u> the weed species is not known to occur in the county, but its status in surrounding counties or states makes a future occurrence seem imminent.
Common Name
spotted knapweed (currently found in the GMA)

diffuse knapweed
yellow star-thistle
leafy spurge
rush skeletonweed
CLASS “B” WEEDS
A weed species of known economic importance and of limited distribution in the county subject to intensive control or eradication where feasible.
Common Name
Musk thistle
Russian knapweed
Scotch thistle
CLASS “C” WEEDS
A weed species of known economic importance and of general distribution subject to control as local conditions warrant.
Common Name
whitetop (heart, lens and globe podded)
Canada thistle
medusahead
Kochia
perennial pepperweed
Russian thistle
OTHER NON-NATIVE WEEDS²
blue mustard
bull thistle
prickly lettuce
clasping pepperweed
bur buttercup
tumble mustard
common mullein

¹ Malheur County Weed Control District, Weed Control Policy and Classification System (Partial List).

² Not in the county weed classification system.

4.8 Rangeland/Grazing Use

Grazing is the predominant land use within the NFMGMA, divided into 19 grazing allotments with 14 grazing permittees. These allotments are categorized as I (Improve: four allotments), M (Maintain: four allotments), and C

(Custodial: 11 allotments). These categories are designed to concentrate public funds and management efforts on allotments with the most significant resource conflicts and greatest potential for improvement.

The Ironside Environmental Impact Statement and Rangeland Program Summary (USDI BLM 1980a, 1980b, 1982) previously described proposed grazing systems for all I and M allotments. These systems were developed and implemented through an allotment management plan (AMP) and subsequent permit or lease, in coordination with permittees and other concerned interest groups. Existing AMPs not only describe a grazing schedule but also specify allotment or pasture-specific objectives and any rangeland improvement projects necessary to fully implement the AMP to meet resource management objectives.

The recent SEORMP ROD (USDI BLM 2002) summarizes current management for each allotment, including livestock grazing levels and management objectives specific to individual pastures. As stated in the SEORMP ROD, "...known management concerns within each allotment will be addressed during scheduled evaluation/analysis of implementation of existing activity plans, or the development of new activity plans." Furthermore, implementation of appropriate management actions to implement decisions of the SEORMP ROD and regional Standards and Guidelines for Rangeland Health (S&Gs) at the allotment level will follow evaluation/analysis as summarized in the adaptive management process described on page 111 in the SEORMP/ROD. The following table shows total, active, and suspended grazing preference for each allotment and permittee, and allotment category, within the GMA.

Table 7. Total, Active and Suspended Grazing Preference for Each Allotment and Permittee, and Allotment Category within the GMA.

PERMITTEE	TOTAL PREFERENCE	ACTIVE PREFERENCE	SUSPENDED PREFERENCE	ALLOTMENT	CATEGORY ¹
Operator # 3603119	1,380	1,380	0	Agency Mountain	I
Operator # 3603105	20	20	0	Agency Mountain	
Operator # 3603151	1,540	1,201	339	Allotment #6	M
Operator # 3603154	991	991	0	Beulah	I
Operator # 3603105	60	60	0	Beulah	
Operator # 3603431	931	931	0	Beulah	
Operator # 3603431	289	289	0	Calf Creek	I
Operator # 3603154	288	288	0	Calf Creek	
Operator # 3603430	1,793	1,793	0	Calf Creek	
Operator # 3603105	4,816	4,816	0	Castle Rock	I
Operator # 3603102	6,503	6,503	0	DeArmond-Murphy	M
Operator # 3603121	129	42	87	Malheur River	C
Operator # 3600205	41	11	30	Malheur River	C
Operator # 3603118	2,376	2,376	0	Whitley Canyon	M
Operator # 3603103	4	4	0	Bridge Creek	M

PERMITTEE	TOTAL PREFERENCE	ACTIVE PREFERENCE	SUSPENDED PREFERENCE	ALLOTMENT	CATEGORY ¹
Operator # 3603105	123	69	54	Butte Tree	C
Operator # 3603215	81	35	46	Chukar Park	C
Operator # 3603130	192	68	124	Cottonwood Creek	C
Operator # 3603105	124	124	0	Ironside Mtn. (West)	C
Operator # 3600260	140	140	0	Ironside Mtn (East)	C
Operator # 3603038	46	26	20	Kivett	C
Operator # 3603128	214	214	0	Lockhart Mtn	C
Operator # 3603103	105	32	73	Ring Butte	C
Operator # 3603153	85	85	0	South Willow Creek	C
Operator # 3603038	67	35	32	Squaw Butte	C
Total	22,338	21,533	805		

¹Category of Allotment: I=Improve, M=Maintain, C=Custodial

²Currently leased to operator# 3603430

DATA COLLECTION AND ANALYSIS

In order to formulate management recommendations about current resource conditions, a variety of information was collected across the NFMGMA in the summers of 2000 and 2001. This information was combined with and compared to previously collected data to determine vegetative health trends, identify locations of specific resource problems, and lead to management actions that would achieve the goals and objectives of the SEORMP ROD.

The GMA evaluation used a variety of methods to assess upland rangeland health, following guidelines specified in “Sampling Vegetation Attributes,” (USDI BLM 1996) and “Intercepting Indicators of Rangeland Health” (USDI BLM 2000).

The BLM also evaluated upland vegetation using the following methods at exact relocation plots: 3-foot by 3-foot photo plots; general overview photos; percent utilization from utilization transects; stocking levels; percent basal cover of plant species using line intercepts (canopy cover of shrubs is also recorded for some years), and professional judgment. The line-intercept transects were used in association with trend photo plots to show basal cover of key forage species along a 100-foot line. Changes in basal cover of 40% or more over time were considered significant in determining trends in upland vegetation health. A combined professional assessment of both photo plot and line-intercept trend data was used to assign a short- and long-term trend determination to each pasture. Trend information was gathered at specific sites in each pasture, and many sites had 20+ years of trend data available. Trend is designated as: Upward, or greater than 40% increase in plant basal cover; Downward, or greater than 40% decrease in plant basal cover; Static or not apparent, between 40% decrease and 40% increase in basal cover. Trend for photo plots, line-intercept transects, and overall trends based on professional judgment are shown for each pasture in the NFMGMA Rangeland Health Determinations (2003, 2004).

An Interdisciplinary Team evaluated the available data to monitor resource response to management actions on a pasture and allotment basis. See the NFMGMA Summary Determinations for summaries of trend findings, S&Gs assessments for Standards 1, 2, 3, 4, and 5, and other issues of concern (e.g., noxious weeds, juniper encroachment) for each I and M allotment and pasture. The Determinations also show livestock authorizations, current grazing schedules, and range improvement projects by allotment. Average actual use and average utilization by allotment

and pasture is published in Appendix G of the Draft EA. All I (intensively managed), M (maintain current management), and C (custodial) grazing allotments within the NFMGMA are listed below with a brief narrative.

IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Agency Mountain Allotment (#00161)

This 8,457 acre I allotment, of which 62% is public land administered by the BLM, consists of four pastures. Authorized use is from 4/1 – 10/31, and active grazing preference is 1,400 AUMs. Refer to SEORMP ROD (p. E-45), for pasture characteristics, objectives, and management considerations.

Allotment #6 (#10204)

This 7,363 acre M allotment, of which 91% is public land administered by the BLM, consists of two pastures. The Malheur River Stream Enclosure (STEX) is excluded from grazing use. Authorized use in the grazed pasture is from 3/15 – 5/15 in Year 1; 8/15 – 11/15 in Year 2; and Rest in Year 3. Active grazing preference is 1,201 AUMs, and suspended grazing preference is 339 AUMs. Refer to SEORMP ROD (p. E-89), for pasture characteristics, objectives, and management considerations.

Beulah Reservoir Allotment (#10217)

This 19,627 acre I allotment, of which 66% is public land and administered by the BLM, consists of two areas of use with 21 pastures. One area of use is around the south end of Beulah Reservoir on both sides of the North Fork Malheur River, approximately 15 miles northwest of the town of Juntura. The other area of use is in the Cottonwood Creek area and is located approximately 24 miles to the northwest of Juntura on the west side of the North Fork Malheur River.

The original Beulah Reservoir Allotment (BLM 1979 Management Framework Plan) was divided into three allotments in 1988 (Calf Creek Allotment #00162, Agency Mountain Allotment #00161, and Beulah Reservoir Allotment #10217). In the SEORMP, the Beulah Reservoir Allotment included a pasture named the East MJ Field. During field surveys in 1999, it was determined that this pasture was actually part of the Little Malheur Pasture of the Whitley Canyon Allotment #10216.

Authorized use in the Beulah Reservoir Allotment is from 3/15 – 10/31, and active grazing preference is 1,982 AUMs. Refer to SEORMP ROD (p. E-106), for pasture characteristics, objectives, and management considerations.

Castle Rock Allotment (#10211)

This 31,253 acre I allotment, of which 68% is public land and administered by the BLM, consists of 15 pastures. Authorized use is from 3/20 – 11/15, and active grazing preference is 4,816 AUMs. Livestock grazing in North Rockpile and Water Gulch Pastures is administered in concurrence with USFWS and adheres to terms and conditions of a biological opinion for grazing activities on North Fork Malheur River allotments. Refer to SEORMP ROD (p. E-98), for pasture characteristics, objectives, and management considerations.

Calf Creek Allotment (#00162)

This 20,543 acre I allotment, of which 90% is public land and administered by the BLM, consists of nine pastures. Authorized use is from 3/1 – 10/31. Active grazing preference shown in the SEORMP ROD is 1,793 AUMs; however, the actual active grazing preference is 2,370 AUMs. Two grazing permittees were not listed in the SEORMP ROD, but hold authorized AUMS in this allotment. Refer to SEORMP ROD (p. E-46), for pasture characteristics, objectives, and management considerations.

DeArmond-Murphy Allotment (#10206)

This 46,572 acre M allotment, of which 78% is public land and administered by the BLM, consists of 26 pastures. Authorized use is from 4/1 – 10/31, and active grazing preference is 6,503 AUMs. Refer to SEORMP ROD (p. E-93), for pasture characteristics, objectives, and management considerations.

Whitley Canyon Allotment (#10216)

This 18,939 acre I allotment, of which 82% is public land and administered by the BLM, consists of seven pastures. Authorized use is from 4/1 – 10/31, and active grazing preference is 2,376 AUMs. In the SEORMP, the Beulah Reservoir Allotment included a pasture named the East MJ Field. During field surveys in 1999, it was determined

that this pasture was actually part of the Little Malheur Pasture of the Whitley Canyon Allotment. Refer to SEORMP ROD (p. E-105), for pasture characteristics, objectives, and management considerations.

CUSTODIAL (C) ALLOTMENTS

Bridge Creek West Allotment (#00109)

This 860 acre allotment is currently one pasture, of which 5% is public land and administered by the BLM. This allotment has a total grazing preference of 4 AUMs (4 active, 0 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to public land occurs. Refer to SEORMP ROD (p. E-4), for pasture characteristics, management objectives, and management considerations.

Butte Tree Allotment (#10212)

This 1,917 acre allotment is currently one pasture, of which 32% is public land administered by the BLM. This allotment has a total grazing preference of 123 AUMs (69 active, 54 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-100), for pasture characteristics, management objectives, and management considerations.

Cottonwood Creek Allotment (#00226)

This 1,810 acre allotment is currently one pasture, of which 47% is public land administered by the BLM. Major improvements have taken place in this allotment by fencing off the riparian vegetation on private land. This allotment has a total grazing preference of 192 AUMs (68 active, 124 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-49), for pasture characteristics and management objectives, and management considerations.

Chukar Park Allotment (#00225)

This 1,355 acre allotment is currently divided into four pastures, of which 45% is public land administered by the BLM. This allotment has a total grazing preference of 81 AUMs (35 active, 46 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-48), for pasture characteristics, management objectives, and management considerations.

Ironside Mountain West Allotment (00112)

This 4,887 acre allotment is currently one pasture, of which 21% is public land and administered by the BLM. This allotment has a total grazing preference of 124 AUMs. Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-7), for pasture characteristics, management objectives, and management considerations.

Ironside Mountain East Allotment (#00114)

This 16,126 acre allotment is currently one pasture, of which 16% is public land and administered by the BLM. This allotment has a total grazing preference of 140 AUMs (140 active, 0 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-9), for pasture characteristics and management objectives, and management considerations.

Kivett Allotment (#00133)

This 3,341 acre allotment is currently one pasture, of which 7% is public land and administered by the BLM. This allotment has a total grazing preference of 46 AUMs (26 active, 20 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-26), for pasture characteristic, management objectives, and management considerations.

Lockhart Mountain Allotment (#00224)

This 5,202 acre allotment is currently divided into five pastures, of which 30% is public land and administered by the BLM. The Six-forty Pasture is predominately BLM ownership. This allotment has a total grazing preference of 214 AUMs (214 active, 0 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-47), for pasture characteristics, management objectives, and management considerations.

Malheur River Allotment (#10219)

This 3,294 acre allotment is currently divided into three pastures, one enclosure which is 100% BLM, and the two other pastures of which 24% is public land and administered by the BLM. One permittee grazes in Lockhart Pasture and has a grazing preference of 11 active AUMs. Malheur River Pasture has one permittee with a grazing preference of 42 AUMs. This allotment has a total grazing preference of 170 AUMs (53 active, 117 suspended). Season and numbers can vary from year to year (currently both pastures are grazed after seed ripe every year) and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-110), for pasture characteristics, management objectives, and management considerations.

South Willow Creek Allotment (#00153)

This 6,817 acre allotment is currently one pasture, in which 24% is public land and administered by the BLM. This allotment has a total grazing preference of 85 AUMs (85 active, 0 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-43), for pasture characteristics, management objectives, and management considerations.

Squaw Butte Allotment (#00233)

This 2,203 acre allotment is currently one pasture, in which 13% is public land and administered by the BLM. This allotment has a total grazing preference of 67 AUMs (35 active, 32 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Most of the riparian on private land in this allotment has been fenced. Refer to SEORMP ROD (p. E-54), for pasture characteristics and management objectives, and management considerations.

Ring Butte Allotment (#10208)

This 3,196 acre allotment is currently divided into two pastures, in which 12% is public land and administered by the BLM. This allotment has a total grazing preference of 105 AUMs (32 active, 73 suspended). Season and numbers can vary from year to year and will not be restricted unless damage to the public land occurs. Refer to SEORMP ROD (p. E-95), for pasture characteristics, management objectives, and management considerations.

4.9 Water Resources and Riparian/Wetland Areas

WATER RESOURCES

NFMGMA encompasses portions of three subbasins, Upper Malheur, Lower Malheur, and Willow Creek. The GMA includes three major perennial river systems that flow to the Snake River via the Malheur River—North Fork Malheur River, Little Malheur River, and Malheur River, and a small portion of South Willow Creek that drains north to Willow Creek. Each river system contains perennial, interrupted perennial, and intermittent seasonally flowing streams. Subsurface recharge and overland flow to these streams are mainly from snowmelt, with peak flows and overland runoff occurring in April and tailing off by late May. By late June and early July, surface flow in the interrupted and intermittent streams is reduced to short, discontinuous segments. In the upper elevations, isolated summer storm systems are common and contribute to flash flood events occurring down many of the stream systems.

Perennial streams and rivers within the GMA include North Fork Malheur River, Little Malheur River, Malheur River, Calf Creek, and Lost Creek. Interrupted perennial streams within the GMA are characterized by submergence and emergence of surface water along the stream length, such that flow is interrupted by dry reaches. Perennial flow in these streams usually occurs as (1) a continuous surface flow originating at a seep or spring source approximately ¼ or more miles long, or (2) a series of short, perennial flowing segments >¼ mile emerging within the stream channel due to a geologic constriction. Intermittent flowing streams usually occur as (1) segments connecting perennial sections of stream where flow begins to submerge through the summer months, or (2) short segments originating from a small seep and/or snowdrift melting where surface flow begins to submerge in summer months.

In many of the streams within the GMA, water quality and quantity were affected by incised channels, absent or reduced streamside vegetation, excessive livestock grazing intensity and duration, western juniper encroachment, and unstable streambank structure (Range Health Determinations, Rangeland Health Standards 2 and 4). Increased water temperature may occur in incised streams where riparian vegetation does not provide adequate shade for surface flows. Lack of riparian vegetation may also lead to increased erosion, higher stream velocities, and accelerated migration of headcuts and lateral stream movement.

Current and historic livestock grazing during hot season months (July-August) has affected riparian vegetation composition and channel stability in NFMGMA. With warmer weather, livestock tend to concentrate in riparian areas seeking quality forage, browse, water, and shade. If livestock are removed following late spring use, regrowth of herbaceous species occurs throughout the summer as long as available moisture is present in riparian area soils. When livestock concentrate in riparian areas and moderate to heavy grazing use occurs in late-spring, summer and into early autumn, herbaceous, and woody riparian vegetation is affected. During this season, active leader growth on woody riparian species, such as willows, becomes vulnerable to livestock utilization. Livestock use during this period typically provides no rest during the growing period to ensure plant vigor, reproduction, or litter accumulation. If rest is not provided, riparian plants do not replace food reserves in roots and seed may not be produced. Concentrated use along drainages generally results in heavy utilization of woody riparian vegetation, trampling, bank shearing damage, soil compaction, and accelerated streambank erosion. Amount of available water storage in riparian areas and peak flow quantity and duration are also reduced by excessive levels of livestock utilization during the hot season.

For NFMGMA, existing water quality data include water temperatures recorded by BLM in Little Malheur River above the confluence of the North Fork Malheur River and by BLM and the United States Forest Service (USFS) on the North Fork Malheur River at several sites. North Fork Malheur River at the mouth and Malheur River at Juntura was listed for fecal coliform from Malheur County Data from 1978-1980. Because Malheur Owyhee Watershed Council had later monitoring data that showed compliance with fecal coliform, North Fork Malheur River was recommended to be monitored for several more years before being withdrawn from the 2002 303(d) list for streams affected by fecal coliform.

Because available site-specific water quality data were limited for NFMGMA, assessing Rangeland Health Standard 4 (Water Quality) was completed through evaluation of pertinent data from the following sources:

1. Waterbody status, whether the stream is on the State 303(d) list (State of Oregon 2003)
2. Limitations on beneficial uses identified for the stream's river basin
3. Existing water quality data
4. Existing supporting data, such as range monitoring data, soil surveys, slope steepness, and aerial photography
5. Assessments for Rangeland Health Standards 1 (Watershed Function –Uplands)
6. Standard 2 (Watershed Function –Riparian), and Standard 3 (Ecological Processes)
7. Drainage patterns
8. Land ownership within watersheds

MAIN DRAINAGES OF NORTH FORK MALHEUR RIVER GMA

BLM manages only small portions of the main drainages in the NFMGMA. Approximately 85% of the BLM managed drainages are the smaller contributing tributaries.

North Fork Malheur River

The North Fork Malheur River drains about 250,000 acres (395 square miles) with a main channel length of approximately 60 miles. Only about half of the acres drained by the North Fork Malheur River are located within the NFMGMA. North Fork Malheur River is a perennial flowing river until it reaches Beulah Reservoir at the river. Although flow in the river below Beulah Reservoir remains perennial, it is controlled by Vale Oregon Irrigation District and may vary due to irrigation use. A series of irrigation ditches present along most of the river downstream from Castle Rock Ranch, are used to irrigate the meadows along the river's floodplain. Within the GMA, this river receives its flow from North Fork Malheur River watershed upstream, Little Malheur River, Bendire Creek, Warm Springs Creek, and several perennial and intermittent side channels. BLM manages approximately 4.3 miles of North Fork Malheur River.

Warm Springs Creek, which drains 48,000 acres, and Bendire Creek, a major tributary to Warm Springs Creek, are perennial streams in their lower reaches, with small, perennial, and intermittent segments scattered throughout the upper reaches. The lower reaches of these streams are located on private land within the GMA and are often ditched to irrigate meadows. Some of the flow on Bendire Creek is controlled by Murphy Reservoir, a significantly-sized reservoir of approximately 30 surface acres, used mainly for recreational purposes. BLM manages approximately 2.6 miles of Warm Springs Creek in this GMA.

Little Malheur River

Little Malheur River has two major tributaries within the GMA, Lost and Bridge Creeks, as well as several smaller tributaries. This system drains about 88,000 acres (137 square miles) with a main channel length of 46 miles before flowing into the North Fork Malheur River above Beulah Reservoir. Little Malheur River is a low gradient, perennial flowing system. Many segments of the river are private, irrigated meadows interspersed with small canyon reaches. BLM manages approximately 1.5 miles of Little Malheur River.

Lost Creek, the main tributary to Little Malheur River, is comprised of perennial flow draining about 19,600 acres (31 square miles). Lost Creek's perennial flow begins where several springs with associated drainages in the headwaters flow into the main channel. The main tributaries to Lost Creek are Cannon Gulch and Little Lost Creek. Cannon Gulch, draining 925 acres, is a large spring/meadow complex that contributes perennial flow close to the headwaters of Lost Creek. The remaining water contribution to Lost Creek is from perennial and intermittent unnamed tributaries, all from spring sources. BLM manages approximately 1.1 miles of Lost Creek in this GMA.

Bridge Creek, the second largest tributary to Little Malheur River, is a perennial system that drains about 15,000 acres (23 square miles). This creek begins at several spring sources and flows through wetland meadow systems before it flows into Little Malheur River. BLM manages approximately 0.5 miles of Bridge Creek in this GMA.

Malheur River

Malheur River is a large river system that drains over three million acres (4750 square miles) in Eastern Oregon. A portion of the Malheur River in the Lower Malheur Subbasin is included in this GMA. This system drains about 26,000 acres (40 square miles) along approximately seven miles of the Malheur River. BLM manages approximately 1.9 miles of Malheur River in this GMA.

Calf Creek, the only perennial tributary to Malheur River in this GMA, drains about 21,000 acres (32 square miles). Calf Creek consists of perennial flow beginning toward the top of the watershed. The stream flows into a tight, narrow canyon with large boulders in the channel creating deep pools. The entire Calf Creek watershed contains only six stream miles of perennial flow.

RANGELAND HEALTH STANDARD 2: (WATERSHED FUNCTION - RIPARIAN/WETLAND AREAS) PFC ASSESSMENT RESULTS FOR NFMGMA

Sites Rated as Proper Functioning Condition (PFC)

Approximately 29 % of all riparian stream miles within the NFMGMA were rated PFC (NFMGMA Draft EA Appendix H, "Proper Functioning Condition Ratings by Allotment").

All of the reaches of North Fork Malheur River in the Castle Rock Allotment were rated PFC. Long-term trend data were assembled from monumented photopoints, habitat surveys conducted for bull trout consultation, and low-level aerial photography (1992, 1998, and 2000). These data indicated an upward trend on the river. Since 1998, this river has been intensively managed for bull trout in cooperation with USFWS. Currently, the North Rockpile Pasture is grazed annually during the spring. Monitoring of the pasture has shown an improvement in the riparian vegetation, including increases in height and recruitment of woody species. The portion of BLM managed river in Water Gulch Fenced Federal Range (FFR) pasture, located directly above one of the large irrigation diversion dams, has historically been rested or grazed lightly consistent with proper riparian management.

Little Malheur River in the Stream Enclosure/Malheur River Allotment and in the Castle Rock Allotment was rated PFC. Long-term trend data were assembled from monumented photopoints and low-level aerial photography (1983, 2000). These data indicated an upward trend in the Stream Enclosure Allotment. A static trend was indicated in the Castle Rock Allotment portion of the river, although it was noted as beginning an upward trend since 2000. A discussion with the permittee about this pasture revealed that they have rarely been using this as a livestock grazing pasture because it is so small, not easily accessible from other pastures, and because private irrigation diversions are located there.

Bendire Creek near Murphy Reservoir in the DeArmond-Murphy Allotment was properly functioning. Long-term trend data were assembled from monumented photopoints and low-level aerial photography (1981, 2000). These data indicated an upward trend below Murphy Reservoir and a static trend above the reservoir. Trend monitoring in

this pasture shows a dramatic improvement in stream condition and riparian vegetation below the reservoir. The photopoints established in 1982 show a stream with very little herbaceous vegetation on it due to hot season livestock grazing. Season of use on this pasture was changed to spring use in the 1990s, therefore contributing to the dense woody vegetation now located along the stream. Increased vegetative cover along streambanks has captured fine sediments, resulting in improved bank stabilization and channel narrowing.

Kingsbury Gulch in the Whitley Canyon Allotment was rated PFC. Long-term trend data were assembled from a stream survey (1979) and low-level aerial photography (1979, 1987, 2000). These data indicated a static trend due to no noticeable change in vegetation. This stream was indicated as having ephemeral flow in the 1979 survey, but since the highway was widened and excluded large portions of the stream from grazing it has become a perennial system.

Some unnamed tributaries in Duck Pond Pasture/Castle Rock Pasture, Hunter Pasture/DeArmond-Murphy Allotment, and several pastures in Beulah Allotment were properly functioning. The portion of BLM-managed stream channel on Warm Springs Creek in DeArmond-Murphy Allotment was also properly functioning. Long-term trend data are not available for these riparian areas within the GMA because there is no recorded information prior to the year 2000 PFC assessments. These riparian areas now have baseline information established through the year 2000 PFC assessments, but will require additional study before definitive long-term trend can be established.

Sites Rated as Functioning at Risk, Upward Trend (FARU)

Approximately 7% of all riparian stream miles within the GMA were rated FARU. Mud Springs Gulch and a few unnamed tributaries to the North Fork Malheur River were the only stream segments designated FARU. Although no long-term trend information was available, the IDT gave these reaches an upward trend rating based on herbaceous and woody plant reproduction along channel banks and floodplain terraces.

Sites Rated as Functioning at Risk, Trend not Apparent (FARN)

Approximately 36% of all riparian stream miles within the GMA were rated FARN. A Functioning at Risk rating with a trend of Not Apparent indicates that one or more physical or vegetative attributes in that stream reach are significantly impaired. These attributes may include excessive erosion or headcutting, hydrologic heaving (hummocking) and compacted soils, bank trampling, lack of plant cover, low plant diversity or lack of reproduction, and impacts from irrigation, water developments, and roads. Although the IDT determined that these reaches were Functioning at Risk, a trend rating of Not Apparent was applicable due to lack of prior baseline or long-term trend information.

Most FARN ratings in the GMA resulted from livestock grazing, juniper encroachment, or a combination of both. Livestock caused soil and bank damage and affected riparian vegetation. Juniper encroachment caused loss of water to systems and replaced riparian vegetation. However, some FARN designations were caused by other factors. For example, Fox Spring drainage in Castle Rock Allotment has a spring development in a wet meadow that concentrates livestock and creates hummocks and compacted areas within the riparian soils. Also, a tributary to the North Fork Malheur River on the lower end of Beulah Reservoir in Agency Mountain Allotment has a road crossing that intercepts most stream flow, desiccating riparian vegetation and subsurface saturation downstream.

Thirty-two springs with wet meadows were rated FARN (Map 7). Most FARN meadows were hummocked from livestock trampling and lacked plant diversity and reproduction due to livestock concentration around spring troughs and headboxes. Hummocks decrease vegetative cover and increase bare soil, directly affecting potential saturation and water yield of the site.

All reaches with a FARN rating will be addressed by changes in management that focus on factors such as current livestock grazing, water developments, or juniper encroachment, that contribute to existing conditions. Many reaches will respond quickly to minor adjustments in management while others may need more intense treatment.

Sites Rated as Functioning at Risk, Downward Trend (FARD)

Approximately 18 percent of all riparian stream miles within the GMA were rated FARD. Calf Creek, Cave Canyon, and Chalk Gulch riparian areas all received a FARD rating. Long-term trend information was available for Calf Creek. Photos showed a long-term overall upward trend in riparian vegetation from when the photos were taken in the 1970s. However, since the 1990s, Calf Creek has been in a static or downward short-term trend due to

factors such as bank sloughing, unvegetated streambanks, lateral stream channel instability, severely hedged willows, and lack of reproduction for woody riparian species. Conditions were attributed to livestock grazing as this pasture has historically had summer livestock use.

The Malheur River in Allotment #6 also rated as FARD with a downward trend. Review of photos from the 1970s and professional judgment indicated a gain in riparian vegetation in the 1970s and 1980s after the area was fenced from livestock grazing. Through the 1990s there was a loss of woody riparian species and invasion of perennial pepperweed that indicated a downward trend. This condition is attributed to the invasion of perennial pepperweed along the entire Malheur River corridor.

Two tributaries to North Fork Malheur River in Agency Mountain Allotment were rated FARD. Both of these streams exhibited bank sloughing, unvegetated streambanks, lack of herbaceous vegetation to protect streambanks, severely hedged willows, and lack of reproduction for woody riparian species. Contributing factors were hot season livestock grazing, wildlife browse on the woody species, and juniper encroachment.

Castle Rock Allotment had two stream reaches rated FARD, a reach on Lost Creek and a tributary to Little Malheur River. Lost Creek was downcut approximately 6-8 feet in areas with a highly entrenched channel. Because herbaceous riparian vegetation was grazed to less than 4 inches during hot season livestock grazing of the pasture, banks were unprotected and sloughing. The woody species were severely hedged with most of the remaining plants either dead or decadent. Regeneration for recruitment was not surviving due to livestock grazing and wildlife browsing. Flows coming into this BLM managed half-mile of stream were not being handled by the channel due to impacts of management practices upstream. The Little Malheur tributary had similar issues and contributing factors, but was not as downcut as Lost Creek.

A segment of North Fork Malheur River in Whitley Canyon Allotment was rated in 1998 and 1999 as FARD although trend assessments completed in 2001 indicated an upward trend. The FARD rating was indicative of the condition of the river at the time of PFC assessment, as recent road construction trespass along the river had contributed to unstable river banks and excessive erosion. By 2001, this trespass had been settled, with reclamation of the disturbed site completed. Trend photos taken along this segment of the river every year since 1999 show a definite upward trend in the woody riparian vegetation and bank stability. In this allotment a segment of Whitley Canyon was also rated FARD. Flows in this channel are controlled by Barrel Reservoir at the top of the drainage. This rating was given due to the earea being heavily invaded by juniper, decreasing water availability to springs and stream channels.

Sites Rated as Non-Functioning (NF)

Approximately 10 percent of all riparian stream miles within the GMA were rated NF. Non-functioning assessment ratings were assigned to Lost Creek tributaries in Sheep Rock, Poison, Clevenger Butte #1, and Clevenger Butte #3 pastures of the Castle Rock Allotment. All of these systems showed historic and current down-cutting, braided channels, lack of surviving regeneration off woody vegetation, and the loss of vegetative cover, decreasing bank stability and accelerating erosion. In all these riparian areas, contributing factors included incorrect spring development design, juniper encroachment, livestock grazing, wildlife browse, and lack of a natural return interval of fire to prevent conifer encroachment.

Murphy Reservoir Pasture in DeArmond-Murphy Allotment had a non-functioning rating on Bendire Creek above Murphy Reservoir. The stream was unstable with braided channels and deposition occurring over the floodplain. This was attributed to proximity of the reservoir, creating a system prone to flash floods in the tailwater area.

A tributary to Calf Creek in the Dishrag Pasture of the Calf Creek Allotment was rated non-functioning. The stream channel was down-cut, loss of vegetative cover has decreased bank stability and accelerated erosion, and riparian vegetation was not allowed to express itself. This was primarily attributed to livestock grazing during the hot season.

RIPARIAN/WETLAND AREAS IN NFMGMA

The BLM Manual "Process for Assessing Proper Functioning Conditions" (Tech. Ref. 1737-9, 1993) defines riparian areas as ". . . a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence.

Typical riparian areas are land along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are sites such as ephemeral streams or washes that do not have vegetation dependent upon free water in the soil.” In the GMA, wetlands occur wherever the water table is at or near the surface, usually in conjunction with a seep or spring. Some of the higher elevation wetland areas are directly recharged by snowmelt from large drifts.

Riparian areas provide food and shelter for the animal community and are critically important to fish, birds, and other wildlife species. Riparian areas affect the quantity and quality of water for on-site and downstream water uses, such as irrigation, water for wildlife, livestock, and for recreation. Riparian areas also help store water and reduce risk of flash floods. For riparian areas to provide these benefits, they must have the plant species diversity, structure, and abundance appropriate for the area.

In NFMGMA, riparian and wetland areas occur along approximately 75 miles of stream channels and 66 seep and spring areas. Both herbaceous and woody riparian vegetation is found in upland meadows, at springs and seeps, and in drainage channels that vary from short, interrupted perennial systems to seasonal streams that in most years only flow until mid-June or early July.

Seep and spring areas are mainly associated with wet meadows in upper watershed areas. These seeps and springs occur on broad, gently sloping uplands, rocky soils located on steep slopes, or in dissected, rocky stream bottoms. Meadows associated with seeps and springs on upland slopes range in size from less than an acre to 55 or more acres, and support woody and herbaceous riparian plant species. At higher elevations, aspen stands dominate the vegetation on seep and spring areas. All of the seeps and springs inventoried have juniper on the sites, much identified as younger than 100 years old.

Stream channels inventoried in this GMA range from rocky, steep gradient streams to wide, wet meadow stream systems. A wide diversity of herbaceous riparian vegetation species were identified, including swordleaf rush, Baltic rush and Nebraska sedge. Woody riparian vegetation is found on riparian areas throughout the entire GMA. Woody vegetation includes willows, redosier dogwood, alder, western chokecherry, bitter cherry, hawthorn, cottonwoods, with quaking aspen stands at higher elevations. The wet meadow stream systems tended to be dominated more by large swards of herbaceous vegetation with woody vegetation present along the fringes of saturated soils. Many of the rocky, steep stream systems were dominated by woody vegetation and small patches of herbaceous vegetation populating where sediment had been trapped. All stream channels inventoried had western juniper on the streams with much of the juniper identified as younger than 100 years old.

Although riparian areas and wetlands cover less than 1% of the GMA, their ecological significance far exceeds their limited physical area. Riparian and wetland areas are major contributors to ecosystem productivity and structural and biological diversity, particularly in drier climates (Elmore and Beschta 1987).

4.10 Soils

Soil resources found in NFMGMA occur predominantly on gently undulating to steep plateaus of basalt, rhyolite, or welded tuff with some very steep faulted and dissected terrain including large areas of canyons and rock escarpments. Soils were surveyed and described in “Oregon's Long Range Requirements for Water” Appendix I-10, Malheur Drainage Basin (Oregon Water Resources Board 1969). The GMA consists of 35 soil mapping units from this Order IV soil survey. Soil mapping units are complexes of soils that are made up of one or more soil types, known as classification units. The GMA’s 35 soil mapping units incorporate 21 classification units (CU) which in turn have slope group designations of 1 to 6 that range between 0 and 60% slope. Descriptions of soil mapping units, CUs, slopes, and individual CUs are found at end of this section.

Ten classification units comprise about 89% of the major soil components within the GMA. The dominant soils in the southern end of the GMA are CU 76, and CU S76, a variant of CU 76. Together these comprise approximately 33% of the GMA. CU S76 is a small component that only occurs in rugged landscape on the flat, rocky tops of some of the large ridges and in the rocky Grasshopper Flat area. Most of the scattered BLM tracts located in the “C” allotments in the northern end of the GMA are composed of CU Lo soils, which comprise approximately 12% of the GMA. The central portion of the GMA is dominated by CUs 82, 83, and 84 which comprise about 26% of the GMA. The rocky, steeply sloping areas with rock outcroppings are CU 9696, which occupy approximately 6% of

the GMA. CU 75, which comprises approximately 5% of the GMA, is located along the ridges on the eastern side of the Little Malheur River in the northern portion of the GMA. CU 60, at approximately 3% of the GMA, is a minor component located on gently, rolling hills. CU 56 is associated with the few large, wet meadow systems in the GMA.

The remaining 11% of the GMA consists of CUs 1, 10, 15, 43, 55, Br, En, Ga, Pe, Ru, and Vi which are almost entirely located on private lands. A small portion of BLM is located in CU 15 which is a minor soil type occurring in the Bridge Creek wet meadow area. CUs 1, 10, 15, and 43 are soils that are associated with the floodplain and terraces of the larger river and stream systems. CUs Br, En, Ga, Pe, Ru, and Vi are all associated with higher elevation and steep sloping areas in the northern portion of the GMA.

Soils within all 1010 CUs are well drained, even though CUs 56 and Lo have cemented pans in the subsoil. Soil surface textures range from silt loam to loam, and subsurface textures range from silt loam to clay loam. All CUs except for 75 and 84 have a significant amount of clay textured soil. Rock fragments in the soil profile range from none in CUs 60 and Lo to extremely stony in S76. The effective rooting depth in most of the GMA (CUs 6, 76L, 75, 76, S76, 83, and 84) is very shallow to shallow (10-20 inches) and is limited primarily by parent material and low annual precipitation. Effective rooting depth in the other CUs is moderately deep to deep and limited by precipitation. Descriptions of soil mapping units, slopes, and CUs for NFMGMA are found in Appendix B of the draft EA.

4.11 Biological Crusts

This section specifically targets summarization of field data obtained by the IDT during work on the NFMGMA. It briefly covers biological crust interactions and processes. For further information on these interactions and processes, refer to USDI USGS Technical Reference 1730-2, "Biological Soil Crusts: Ecology and Management." This manual has an extensive list of references.

Optimum abundance and growth conditions for biological crust are usually found in areas of low vascular plant cover, low elevations, and in shallow soils with fine textures that contain low quantities of loose surface rock or large quantities of embedded rocks (USDI USGS, 2001). The majority of the area evaluated in the NFMGMA has high vascular plant cover due to the juniper-dominated landscape. Elevations in the GMA climb steeply from the river bottoms at 3,000 feet to the ridge tops in the rugged country at approximately 6,000 feet. There are not many low elevation acres. Soils in the GMA range from very shallow to deep, with shallow soils mostly dominated by rock and on steep to very steep slopes. Surface textures are loams, with clay occasionally present in the subsoil. All of these factors indicate that biological crusts do not have the potential for a large presence in the GMA.

Major vegetation cover types in NFMGMA associated with biological crust development include low sagebrush and big sagebrush. Occurrence of crusts in these cover types is directly related to elevation, precipitation, soil depth, soil texture, and interspaces between vascular plant cover. Juniper occurs in approximately 64% of the public lands in the NFMGMA. Juniper areas have less potential for biological crust development than in low sagebrush and big sagebrush cover types and occurrence of crusts is not as widely studied for that reason.

During the 2000 – 2001 field seasons, the MRA IDT assessed the NFMGMA for upland rangeland health conditions. Soil resources in NFMGMA were assessed for basic physical functions, including Soil/Site Stability (capacity to limit redistribution and loss of soil resources, including nutrients and organic matter, by wind and water); Hydrologic Function (capacity to capture, store, and safely release water, to resist a reduction in this capacity, and to recover this capacity following degradation); and Integrity of the Biotic Community (capacity to support functional and structural communities, to resist losses due to disturbance, and to recover following disturbance). All of these functions relate directly or indirectly to biological crust cover, either as a deterrent to wind and water erosion or as a component of an intact biological community.

Unfortunately, no Ecological Site Guides for biological crusts existed during the 2000 – 2001 field season, and site guides for crust are still not available (Mike G. Karl, Rangeland Ecologist, BLM, personal communication, 2004). Therefore, the percentages of biological crust cover recorded for NFMGMA cannot be compared to Potential Natural Community, or to crust cover that existed historically. Additionally, "Biological Soil Crust: Ecology and

Management” (USDI BLM 2001) was not available for reference during the 2000 field season when these sites were inventoried. Since that time, resource personnel in MRA have obtained this technical reference.

Biological crust occurrence was recorded at five sites that were used as Ecological Reference Sites. None of these sites had been grazed by livestock in recent years and were in late seral to potential natural communities, indicating excellent ecological conditions. Crusts on these reference sites were 0-1% for both total vegetative canopy cover and ground cover.

Standards and Guides assessments were done at 101 assessment sites with biological crust occurrence recorded as percentage of total vegetative cover (living plant material only) and percentage of total ground cover (including bare ground and litter). Crust ranged from 0% to 1-5% of total vegetative canopy cover and from 0% to 1-5% of ground cover throughout the GMA (Vale BLM District Office files).

In general, at higher elevations, greater vascular plant cover precludes crust growth (USDI 2001). Crusts in about 45% of the assessment sites comprised only 0-1% of total vegetative and ground cover. Crusts were not found in approximately 50% of the sites assessed. This generally lower crust abundance may be due to historical livestock grazing, higher elevations and precipitation, dense juniper and big sagebrush cover, or a combination of factors. The assessments identified approximately 5% of the sites having 1-5% cover of biological crusts. These sites had slightly higher moss populations due to their locations in some of the high elevation forested areas.

Severe surface disturbance occurred in NFMGMA with the conversion of native rangeland to seeded crested wheatgrass. Portions of Beulah Seeding, Big Seeding, Little Seeding, Scab, and McClellan pastures were plowed or disked, then drilled and seeded with crested wheatgrass during the 1960s. These mechanical activities would have disturbed and altered any biological crust composition present. Over the decades, big sagebrush has recolonized parts of all seeded areas, with some recovery of antelope bitterbrush, rabbitbrush, and Sandberg bluegrass.

Invasion of exotic annual plants into perennial plant communities can pose a long-term threat to biological soil crust, as the crust-dominated interspaces between perennial plants is often heavily invaded. Range Health Determinations (2003, 2004) described the present state of noxious weeds within the NFMGMA. In general, noxious weeds have a small presence in NFMGMA. Invasive annuals are more common, with cheatgrass being the most prevalent weedy species found. Historic livestock grazing in combination with south aspects and shallow soils in perennial grasslands have converted historic perennial grasslands in the lower elevation slopes in the southern end of the NFMGMA into biologically at risk systems, due to the invasion of annual weedy species.

Each of the 101 upland vegetation site assessments contains information on composition of noxious weeds and invasive annuals. Seventy-nine of the sites assessed had some level of invasive annual weeds ranging from a trace to 50% vegetative cover. Of these sites, 65 were in the range of trace to 5% range of invasive annuals. Twelve of the 14 remaining assessment sites had cheatgrass present in the range of 6-15%. The pastures where this occurred were generally in the lower elevation areas of the GMA, areas with shallow soils, southern exposures, and historically heavier livestock concentrations. Orchard Pasture in the Agency Mountain Allotment had one assessment site that rated cheatgrass as 16-30% while Juniper Gulch Pasture in Allotment #6 had a rating of 31-50%. Plant composition at both these sites was a result of the previously mentioned factors.

Wildfire and prescribed fire can also cause widespread disturbance to soil surfaces and crust quantities. Because of low fire occurrence and near continuous shrub cover in NFMGMA, crusts have a medium for protection and colonization and the potential for recovery. Approximately 14,000 acres of native range have been disturbed by wildfire (Fire Section 4.12), and a few prescribed fires have been ignited in the unit. Even in 1986, 2000, and 2001, years with large numbers of fires, NFMGMA has not sustained appreciable shrub cover loss due to fire.

Grazing intensity in NFMGMA has been generally “light” to “moderate” in native pastures, while seeded pastures allow utilization levels up to 60%. Although Ponzetti and McCune (2001) indicated that livestock disturbance impacts biological crust cover, some crusts are found throughout NFMGMA. During the 2000-2001 field seasons, the IDT did not observe any areas where the presence of biological crusts deviated from the crust levels identified in the reference areas.

4.12 Fire Regime and Fire Regime Condition Class, Fire History, and Fuels Management

FIRE REGIME AND FIRE REGIME CONDITION CLASS (FRCC)

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse-scale definitions for natural (historical) fire regimes have been developed by Hardy, Schmidt, Menakis, and Samson (2001) and Schmidt, Menakis, Hardy, Hardy, and Bunnell (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural (historical) fire regimes are classified based on the average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation.

All five historic fire regimes are represented with the North Fork Malheur River GMA. The fire regimes represented within the GMA include the following:

FIRE REGIME I – This fire regime is characterized by a typical fire return interval ranging from 0-25 years. Fire severity is generally low with only the ground fuels and understory vegetation being consumed. Large stand-replacing (overstory killing) fires can occur under certain weather conditions, but are rare events. Vegetative communities within the GMA represented by this fire regime include dry ponderosa pine and dry Douglas fir forest stands. This fire regime represents a small portion of the total GMA.

FIRE REGIME II – This fire regime is characterized by typical fire return intervals ranging from 10-25 years. Fire severity is generally high to moderate, meaning that the upper layer canopy of the existing vegetation is usually completely burned. Vegetative communities within the GMA represented by this fire regime include mountain big sagebrush (including sites where western juniper is encroaching), mountain shrub land, and perennial grassland.

FIRE REGIME III – This fire regime is characterized by typical fire return intervals ranging from 35-100 years. Fire severity for this fire regime is categorized as mixed, meaning that a portion of the upper layer canopy of existing vegetation remains unburned creating a mix of stand ages and size classes resulting in heterogeneous landscapes. Large, stand-replacing fire may occur but are usually rare events. Vegetative communities within the GMA represented by this fire regime include moister Douglas fir forest stands.

FIRE REGIME IV – This fire regime is characterized by typical fire return intervals ranging from 35-100 years. Fire severity for a typical fire in this fire regime is categorized as high, meaning that the upper canopy layer of vegetation is generally killed. Ignitions within this fire regime that result in large fires are generally rare. Vegetative communities within the GMA represented by this fire regime include Wyoming big sagebrush, including sites where juniper is encroaching, mountain mahogany and low sagebrush.

FIRE REGIME V – This fire regime is characterized by typical fire return intervals greater than 200 years. This fire regime occurs at the environmental extremes where natural ignitions are very rare or environmental conditions rarely result in large fires. A vegetative community within the GMA represented by this fire regime would be old growth characteristic juniper stands on areas protected from fire (rocky knobs).

FRCC is a classification of the amount of departure from the natural fire regime (Hann and Bunnell 2001). Determination of the amount of departure is based on a comparison of current attributes (vegetation-fuel composition, fire frequency, and fire severity) to the expected attributes of natural fire regime.

One or more of the following activities may cause departure from the natural fire regime: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects and disease, or other management factors. Three condition classes have been developed based on a relative measure describing the degree of departure from the historical natural fire regime.

The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure of current conditions from the central tendency conditions of the natural regime (Hann and Bunnell 2001). Low departure is

considered to be within the natural (historical) range of variability, while moderate and high departures are outside the natural range of variability and may indicate areas where fire/fuels treatment may be warranted.

Changes in Fire Regime Condition Class (FRCC) have greatly influenced the distribution, composition, and structure of rangeland, woodland, and forest vegetation within the GMA. In many locations, the frequency of fire has decreased because of fire suppression activities and/or removal of fine burnable fuels (grasses) by grazing. Changes resulting from decreased fire frequency include:

- Encroachment of conifers, including ponderosa pine, Douglas fir and western juniper, into non-forested vegetation (sagebrush, aspen, and mountain mahogany).
- Increased tree density and fuel loadings in former savanna-like stands of juniper and ponderosa pine.
- Increased density or cover of big sagebrush and other shrubs, with an accompanying loss of herbaceous vegetation.
- Increased fuel loading in forested vegetation.

In contrast, fire frequency has increased in drier locations where exotic annual grasses such as cheatgrass and medusahead have become established. These changes in fire regimes have caused greater homogeneity of some landscapes within the GMA.

All three condition classes are represented within the GMA. Generally speaking, big sagebrush (mountain or Wyoming) communities with either juniper encroachment or annual grassland understories are representative of Condition Classes 2 and 3. Forest stands within the GMA are predominately in Condition Classes 2 and 3 with the exception of specific areas in Condition Classes 1 and 2 that have been recently treated either by either by mechanical methods or by prescribed fire. Overall, the FRCC across the entire GMA can be predominately characterized by Condition Classes 2 and 3.

FIRE HISTORY

Existing fire history records (1980-2003) indicate that 87 fires have burned a total of 14,234 acres within the NFMGMA. Fires greater than 100 acres in size include the following:

Table 8. NFMGMA Fire History.

Fire Name	Year	Acres
Ironside	1994	5,890
Powder	1994	3,380
Beulah	1981	1,957
Sheep Rock	1981	650
Lower Beulah	1986	474
Adobe Reservoir	1991	300
Beulah	1989	297
Hunter Creek	2003	232
Castle Rock	1994	160
Clevenger Mountain	1998	144
Big Flat	1998	100

FUELS MANAGEMENT

A variety of fuels management activities have been initiated or completed within the GMA to meet resource objectives outlined in the SEORMP, Fire Management Plan (FMP), or other activity plans. These include the following:

- The use of prescribed fire and mechanical thinning to reduce fuel loadings within timber stands near Castle Rock.
- The use of mechanical treatments on western juniper where it has encroached into big sagebrush communities.

The objective of the Fuels Management program is to focus on improving the FRCC within the NFMGMA consistent with other resource objectives. This includes improving FRCC 2 and 3 areas while maintaining areas in FRCC 1.

4.13 Aquatic Species and Habitats

The SEORMP provides guidance for management of fish and aquatic habitat in NFMGMA. The primary objective for aquatic habitat management is to restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of fishes and other aquatic organisms.

In general, riparian areas and stream habitat conditions are considered beneficial for aquatic species when 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. In addition, riparian/wetland vegetation should be increasing in ground cover and canopy volume (height and width), and key woody plants should exhibit multiple age-classes, where appropriate.

Pastures with riparian/wetland habitats that meet Rangeland Health Standard 2 (Watershed Processes—Riparian) are also considered to meet Rangeland Health Standard 5 (Native, T&E, and Locally Important Species—Riparian). See Map 6 (“Riparian Area by Function Condition”) for information on PFC assessment results for both streams and wetlands.

FISHERIES IN NFMGMA

At least 12 native fish species occur in NFMGMA streams and include interior redband trout, bull trout, mountain whitefish, redband shiner, specked dace, longnose dace, chiselmouth, bridgelip and largescale suckers, northern pikeminnow, and sculpins. (Map 8, “Aquatic Special Status Species”). Two species have special status designations; bull trout, which are federally listed as Threatened, and redband trout, on the BLM’s special status species list and Bureau Tracking list.

In the Malheur River drainage, anadromous runs of steelhead, chinook salmon, and possibly Pacific lamprey were lost with construction of Columbia River, Snake River, and Malheur River dams, including Agency Dam (1934) on the North Fork Malheur River. Access to the Malheur from the Snake River was limited after 1881 due to construction of Nevada Diversion Dam on the lower Malheur River below Vale. Several nonnative fish species occur in the main Malheur River, and include brown bullhead, smallmouth bass, white crappie, and yellow perch. In general, nonnative fishes are blocked from the upper reaches of the North Fork and its tributaries by Agency Dam, although illegally introduced white crappie in Beulah Reservoir may occur there in small numbers. ODFW periodically stocks a coastal strain of hatchery rainbow trout in Beulah and Murphy reservoirs, and some natural reproduction likely occurs upstream of these impoundments in the North Fork Malheur River and in Bendire Creek.

Besides trout, the other cold-water dependent fish species are sculpins. Little is known about their distribution because they are secretive and rarely identified in inventories. Shorthead sculpin occur in the North Fork and Little Malheur rivers, and other species may be present. Because their habitat requirements are similar to trout, sculpins are likely confined to headwater areas in smaller tributaries where stream temperatures and sediment loads are lowest.

Bull Trout

The North Fork Malheur River bull trout subpopulation is located in the Upper Malheur Subbasin. Because dams on both Beulah and Warm Springs reservoirs prevent upstream fish passage, the North Fork Malheur bull trout are isolated from other populations in the Malheur and Snake River systems. The North Fork subpopulation is not connected with other subpopulations, so opportunities for recolonization do not exist. However, no competitive or hybridizing species, such as brook trout, occur in the North Fork, making this basin especially valuable to bull trout as a refuge. Bull trout migrate between headwater tributaries on Malheur National Forest, where they spawn in the fall, and Beulah Reservoir. Spawning does not occur within BLM ownership nor do records indicate that bull trout historically spawned here. However, migratory and possibly rearing habitat is present on BLM reaches in Upper and Middle North Fork Malheur watersheds.

Vale District BLM administers 1,441 acres in the North Fork Malheur River corridor and 4.5 miles of the 14.8 river miles that extend from the south boundary of the Malheur National Forest to Beulah Reservoir. The majority of BLM lands in the river corridor occur from the forest boundary 4.0 miles downstream to the confluence with Little Malheur River. Public land in this reach is interspersed with about 2.0 stream miles of private land. A disjunct, 0.5 mile BLM river segment is located 2 miles above Beulah Reservoir.

The North Fork Malheur River above Beulah Reservoir is situated within a basalt canyon with moderately steep to precipitous hillslopes. Riparian communities are dominated by Douglas fir, ponderosa pine, and red osier dogwood in the upstream reaches, and willow, mock orange, dogwood, and grasses downstream. Although livestock utilization in the canyon during the late 1970s and '80s was moderate to heavy, grazing schedules have been altered and recent monitoring on federal land shows good condition and upward trend for riparian vegetation in most areas.

Total bull trout numbers for the North Fork Malheur River were estimated in 1991-92 to be about 4,000 fish (ODFW), but numbers have likely increased due to fishing closures and habitat improvements. Since 1996 redd numbers appear to be correlated with precipitation, and lower redd numbers in 2002-2005 may reflect recent drought conditions. Despite variation in stream miles surveyed for the last 33 years, redd counts for 2005 suggest that number of spawners has remained relatively stable since 2003. (Table 9)

Table 9. Bull trout redds observed in the North Fork Malheur River watershed (ODFW 2006).

Year	Redds	Miles Surveyed	Redds/mile
1996	38	21.2	1.8
1997	64	17.6	3.6
1998	74	21.4	3.5
1999	115	20.5	5.6
2000	153	21.5	7.1
2001	125	20.7	6.0
2002	99	14.6	6.8
2003	63	22.0	2.9
2004	64	16.2	4.0
2005	67	21.6	3.1

Excessive sedimentation and chemical contamination are not concerns in BLM river segments. Except in periods of seasonal runoff, turbidity is low in the North Fork, and rocky substrates were not embedded in the reaches surveyed. Absence of mining, industry, or residential areas in the upper basin precludes chemical contamination. In upper reaches, no evidence of nutrient loading, such as abnormal algal growth, is present, although water quality testing has not been done. Excessive nutrients from agricultural runoff may be of concern near and around Beulah Reservoir, however. Water temperatures within the Middle North Fork watershed are functioning at unacceptable risk to migrating bull trout adults. Thermographs placed in the North Fork Malheur River above the confluence with Little Malheur River have recorded maximum daily and seven-day average maximum temperatures well above the Oregon Department of Environmental Quality (DEQ) standard. After receiving warmer water from Little Malheur River and flowing 77 miles through private land, the North Fork daily maximum temperatures in Water Gulch pasture increase 2°C on average.

There are no physical barriers to bull trout movement throughout their migratory corridor, but fish flushed below Beulah Reservoir dam are not able to return and are lost to the population. Unscreened irrigation diversions at Castle Rock Ranch may impact migrating fish on the North Fork below the confluence with Little Malheur River. Five diversions on private land on Little Malheur River near the Malheur National Forest boundary have been screened, though it is not likely that bull trout currently utilize the Little Malheur River.

A 1998 ODFW stream survey described in-stream habitat conditions in the North Fork Malheur River on BLM-administered reaches between Beulah Reservoir and the USFS boundary upstream. Riffles and rapids were the most common habitat type, and percentage of pool area was low, ranging between 4% and 11%. Few large pools (>1 m²) were present. Densities of large woody debris measured at <20 pieces/mile were not at levels recommended for appropriate functioning, and potential sources of short- or long-term wood recruitment decreased with distance downstream. Off-channel habitats consisted of some backwaters and side channels, but these areas were infrequent due to the constrained valley landform. Although constrained, the river in this section was not downcut and was linked hydrologically to off-channel areas during periods of high flow. Refugia were not available for maintenance of early bull trout life stages, but adequate migratory habitat for adults and possibly juveniles exists in spring and fall when water temperatures are cool.

With regard to hydrologic flow, it is probable that peak and base flows have been altered by logging, grazing, and road building in the watershed, but there is no indication that functioning is impaired. Flooding has occurred in the past, but significant disturbance associated with flooding events is not readily evident. Based on hydrologic, geologic, soil and vegetation characteristics, it is reasonable to conclude that overall this watershed is moderately resilient to natural hydrologic disturbances such as flooding, debris flows or mass movement processes, although potential for these disturbances exists.

Road densities in the North Fork Malheur watershed are moderate at 1.03 miles of road per square mile. A road follows the river valley for 6 miles above Beulah Reservoir, but only a 2-mile stretch approaches within 200 feet of the river. The road surface is well graveled and does not appear to generate excessive amounts of sediment. The North Fork corridor is roadless between Castle Rock Ranch to Crane Creek crossing in Malheur National Forest, with the exception of two swaths bladed in 1998-1999 across the river on Whitley Canyon Allotment. Natural revegetation and reclamation work have greatly reduced the impacts of this blading on trout habitat.

Disturbance from timber harvest and fire on BLM holdings is relatively low in the North Fork Malheur River area. Between 1955 and 1996, 36 acres in Middle North Fork Malheur watershed and 373 acres in Little Malheur watershed were logged. Since 1980, few major wild fires have occurred, including the 5,780-acre Powder timber fire in Little Malheur watershed, and a 500-acre fire in juniper and grassland at Beulah Reservoir. However, disturbance from historical agriculture and livestock use has been significant in North Fork Malheur and Little Malheur watersheds. Riparian areas along the migratory bull trout corridor have been impacted in reaches above Beulah Reservoir by agriculture, livestock, and roads, but reaches above the confluence with Little Malheur River are relatively intact, with herbaceous and woody riparian components approaching potential natural communities.

Based on data from 1999 (Burns Paiute Tribe 1999), migration of 18 radio-tagged adult bull trout from Beulah Reservoir began mid-April and continued until late May, with most fish moving above Crane Creek Crossing by the first of August. In May 1999, one radio-tagged adult was observed 1 km up the Little Malheur River. In 1998, tagged bull trout were also found in the Little Malheur River in May and early June. All of these fish returned to the North Fork Malheur River within two weeks and continued their migration upstream. No 1999 radio-tagged adults remained within the BLM portion of North Fork Malheur River during the warm summer season (30 June - 10 October). Tagged bull trout returned to Beulah Reservoir in late October to mid December, with peak returns to the reservoir occurring in November.

Inland Redband Trout

Native redband trout in eastern Oregon have evolved adaptations to live in harsh environments characterized by great extremes of water temperature and flow. During low flow periods, redband trout are found primarily in headwater areas in fragmented populations. Although this rainbow trout subspecies has adapted to warm, arid rangeland streams, high water temperatures in downstream reaches limit its summer distribution. Trout distribution during fall, winter and spring is less fragmented because higher flows and lower temperatures allow fish to use more stream corridors. During spring, it is possible that individuals can move throughout the basin.

In these situations, hatchery strains of rainbow trout may not be effective predators or competitors. However, hatchery trout have hybridized with most populations of resident redband trout in much of the Columbia River basin and undoubtedly, a considerable amount of genetic diversity has been lost during the last 100 years. In the NFMGMA, rainbow/redband trout occur in the Mainstem North Fork, Little Malheur River, Lost Creek, Bendire Creek, and Calf Creek. Allozyme genetic testing of trout from Bear Creek on North Fork Malheur River in Malheur

National Forest showed that these fish had allelic frequencies mostly characteristic of native inland redband trout, with some genetic drift or introgression with hatchery stock (Currens 1994). However, genetic analysis of trout from Calf Creek suggested that this population has been influenced by introduced or hybridized rainbow trout (Currens 1994, 1996). Consequently, maintenance and improvement of habitat for this headwaters trout population is a high priority.

Current distribution of stream fish in the geographic area is primarily influenced by summer water temperatures and flow levels. Maximum water temperatures are higher in downstream reaches than at the headwaters and coldwater species such as redband trout and sculpins are restricted to higher elevations in summer. Several factors may contribute to high stream temperatures: (1) summer flows can be extremely low or intermittent, and low water volumes heat up easily; (2) irrigation diversions can further reduce flow, and water returning from irrigated fields can be warmer than the source stream; and (3) scarcity of riparian canopy increases solar heating. Riparian vegetation not only shades water from hot summer sunlight, but also stores and cools subsurface water by trapping moisture and sediments in its matted root systems.

Fingerling hatchery rainbow trout are stocked annually by ODFW into Beulah (80,000 fish) and Murphy (4,000 fish) reservoirs. Rainbow trout have escaped reservoirs and survived to spawn with native redband trout in nearby streams, generating genetically mixed trout populations with varying percentages of hybrid genes. The goal of the stocking program is to provide angler opportunities, and anglers from Vale, Ontario, and Idaho utilize this fishery.

Other common native fishes in North Fork Malheur watersheds include speckled and longnose dace, bridgelip sucker, and redband shiner. These warm water adapted species can tolerate a range of stream temperatures and turbidities. They are abundant in mainstream reaches and streams lower in the basin and overlap with redband trout and sculpin in some headwater areas. Currently, there are no management concerns with these fishes.

AMPHIBIANS AND AQUATIC REPTILES IN NFMGMA

Streams, reservoirs, and wetlands in NFMGMA provide habitat for a diversity of aquatic organisms as well as for fish. Amphibians are especially vulnerable to habitat degradation and can be impacted by loss of riparian vegetation, reduced flows, and the presence of exotic predators such as non-native fish or bullfrogs. Two native amphibians found in this geographic area, Columbia spotted frogs and western toads, are special status species.

Columbia Spotted Frog (Federal Candidate)

The Great Basin population of Columbia spotted frogs is restricted to portions of southeastern Oregon, Idaho, Nevada, and Utah and has been heavily impacted by loss of habitat and introduction of exotic species. In NFMGMA, Columbia spotted frogs occur in the North Fork Malheur, Little Malheur, and Bendire Creek watersheds. Spotted frogs require permanent water with algae or aquatic plants for cover, usually near springs. Removal of riparian vegetation and lowered water tables adversely affect frog populations, and excess sedimentation may reduce survival of overwintering adults.

Spotted frogs often do not breed, feed, and hibernate in the same site and therefore need suitable habitat between those sites to act as corridors of movement. The corridor must be moist to provide protection from desiccation and must provide cover as protection from predators. Studies with marked frogs in Idaho showed that frogs moved 1.2 km and up to 6.5 km between foraging and hibernating habitats (Engle 2001). Therefore, riparian cover, especially herbaceous species, protects frogs from overhead predators, increases food availability, and provides suitable movement corridors between important habitat components. Additionally, bank-stabilizing rushes, sedges, and willows increase the abundance of slow-water oxbows, side channels, and meadows necessary for frog breeding habitat.

Data on the effects of cattle on spotted frogs are scanty and often weak. Surveys conducted in the Owyhee Mountains of Idaho, that looked for associations of grazing and presence of spotted frogs, detected either a modest negative effect or no observable effect (Munger, Ames, and Barnett 1997). These analyses relied on relatively vague measures of cattle usage and are therefore not as reliable as experimental studies where grazing would be tightly controlled. Bull and Hayes (2000) used similar survey techniques to assess differences between grazed and ungrazed sites and found that grazed sites had larger egg masses, suggesting greater food availability at grazed sites. Unfortunately, their study confounded potential effects of cattle with possible elevational effects and was conducted in a forested area much different from Bendire Creek or the Owyhee Mountains.

In some situations, frogs are much easier to find in moderately grazed patches than in adjoining ungrazed patches, but whether this difference reflects an actual difference in numbers or is simply due to increased visibility of frogs in more open habitat is unknown. However, intense grazing that denudes riparian cover cuts the migratory corridors between breeding, feeding, and hibernating sites. Patla (1997) found that barriers in wet movement corridors were likely responsible for the decline of spotted frogs in the Yellowstone area. Additionally, concentrated fecal inputs that would occur from livestock at the proposed water gap would impact water quality in downstream reaches. An experiment of the effects of added cow feces and urea on survival of spotted frog tadpoles showed that survival was significantly lower with higher concentrations (Howard 2000).

Western Toad (Bureau Tracking)

In NFMGMA, western toads occur in the North Fork Malheur, Little Malheur, and Bendire Creek watersheds. While western toads occur in habitats similar to those used by Columbia spotted frogs, they are a largely terrestrial species and can be found far from water. They range throughout most of Oregon from sea level to mountainous areas. These toads are adaptable and can survive in agricultural and residential areas, given the presence of ponds, ditches, or slow streams for breeding. Recently observed declines in western toad populations nationally have been linked to altered atmospheric conditions, disease, and habitat loss, and have increased the importance of proper management of wetland breeding habitat.

The Pacific treefrog is abundant and well distributed along GMA streams, breeding in side channels, sloughs, and pools. Treefrogs also occur at springs and reservoirs, often isolated by several miles of inhospitable sagebrush steppe. Pacific treefrogs are particularly adapted to arid ecosystems, opportunistically laying eggs in almost any small body of temporary water and, during dry periods, taking refuge under rocks or in rodent burrows. Habitat for treefrogs in livestock reservoirs is generally heavily utilized by livestock and is characterized by reduced vegetative cover and trampling of pool margins. While lack of cover probably affects vulnerability of treefrogs to predation, few studies have quantified the impacts of grazing on amphibians.

Both common and wandering garter snakes are found near water along GMA streams such as North Fork Malheur River, Bendire Creek, and Calf Creek, and are especially abundant where fish and tadpole prey are concentrated in isolated pools and sloughs. Although garter snakes forage on open stream banks, they utilize vegetative or structural cover such as shrubs, herbaceous plants, or rock, for escape and may be impacted by complete removal of riparian cover by livestock. In a study of a willow riparian community in New Mexico, wandering garter snake captures were five times greater in enclosures with 17% shrub cover than in adjacent grazed areas that lacked vegetative cover (Szaro, Belfit, Aitkin, and Rinne 1985).

AQUATIC INVERTEBRATES IN NFMGMA

Limited information is available on invertebrates, and more is known about aquatic than terrestrial species. Stream invertebrates are routinely collected as part of the fisheries habitat monitoring program. These collections are analyzed for species composition, abundance of organisms, and the presence of certain indicator species. If many species that are adapted to polluted or degraded environments are found, then the stream being assessed may be a candidate for restoration or improvement. Conversely, the presence of invertebrates found only in clean water, such as certain stoneflies or mayflies, indicates good stream conditions.

Invertebrate samples collected in 2000 by Malheur National Forest from the North Fork Malheur River three miles upstream from the BLM boundary showed that the invertebrate community was dominated by caddisfly species (especially *Brachycentrus* and *Wormaldia*) and mayflies (*Epeorus*) with low tolerances to pollution or nutrient enrichment. Diversity of mayfly, stonefly, and caddisfly species was high. Midge larvae, which are adapted to high sediment loads and organic enrichment, were common. Other pollution-tolerant taxa included dragonflies, damselflies, and water mites. Stoneflies (*Calineuria*, *Claassenia*, and *Pteronarcys*), indicators of clean water, were present in low numbers. In general, invertebrate species with low tolerances to nutrient enrichment made up only 2% of the benthic community, a proportion that suggests an absence of organic enrichment in this portion of the North Fork Malheur River.

Freshwater mussels were inventoried in NFMGMA in 2004. The western pearlshell mussel (Bureau Tracking list), a species dependent on good water quality, was abundant in the North Fork Malheur River above Beulah Reservoir and occurred in lesser numbers in Little Malheur River. No other mussel species were observed.

Springs can be a source of unique, often endemic, assemblages of invertebrates that are adapted to the constant temperatures and distinctive geochemical environments that springs provide. Because these habitats are uncommon and isolated, a particular species, such as a snail or beetle, may be found only at that site and may have little opportunity for dispersal or migration to other areas. In some cases, these invertebrates are vulnerable to development that eliminates shallow pools and surrounding riparian vegetation. It is expected that spring systems that meet Standard 2 (Watershed Function—Riparian) should provide habitat that sustains healthy invertebrate communities, and that these systems will also meet Standard 5 for riparian species.

4.14 Wildlife and Wildlife Habitats; Special Status Animal Species

Overall conclusions in this section pertaining to sagebrush habitat health and suitability for wildlife are based on a comparison of NFMGMA conditions with current wildlife habitat management literature (related to greater sage grouse, sagebrush steppe landbirds other than sage grouse) and habitat relationships described in “Wildlife Habitats in Managed Rangelands; The Great Basin of Southeastern Oregon” (Maser et al. 1984). Evaluation narratives that follow are derived from field estimates of resource attributes, quantitative field data, and professional judgment.

The topics and the desired conditions for communities of wildlife on public land addressed in this evaluation are also based on the SEORMP FEIS Chapter 2 and Appendix F, “Wildlife Habitat Descriptions and Considerations”. More specific details and supporting information that pertain to observed conditions for wildlife are cited in the NFMGMA Range Health Determinations (2003, 2004).

TERRESTRIAL WILDLIFE SPECIES OF MANAGEMENT IMPORTANCE IN NFMGMA

Northern bald eagles (Federally Threatened list) are the only federally listed vertebrate species known to occupy NFMGMA. Eagles winter on the North Fork Malheur River, the Malheur River, and Beulah Reservoir, but are not known to nest at any of these locations.

Bald eagles usually require tall trees for roosting, but tree species such as cottonwoods are localized and limited to small stands and individuals in a few drainages due to site potential limitations, including severe hydrologic scouring events. Mature trees upstream that could potentially recruit more cottonwoods from seed sources are present in some basins. Cottonwoods are common and fairly well developed as gallery stands on parts of the North Fork Malheur and Main Malheur River in NFMGMA. Based on observations made during winter surveys, bald eagles found in NFMGMA roost in cottonwoods, junipers, and on cliffs in the area.

Grazing practices and recreational activities are not likely to adversely affect wintering bald eagle populations within NFMGMA. Consequently, there are no violations of the Endangered Species Act (Section 7) and consultation with the USFWS is not necessary. Refer to the Biological Assessment for the SEORMP, Vale District Office, for further information.

Two other federally listed vertebrate species, the gray wolf (Federal Endangered) and the Canada lynx (Federal Threatened), could potentially inhabit NFMGMA and habitats to the north and west as wolves migrate from central Idaho to occupy new territories and establish resident packs, and as Canada lynx individuals disperse and take advantage of habitats and prey.

Recent evaluations of habitats on Ironside Mountain have speculated that the area is not currently lynx habitat, but with management, forest and shrub-steppe fringe areas could potentially provide adequate habitat as prey species occupy the area after treatment of forest health issues. Anticipated occupancy would likely only be short-term as individuals take advantage of resources available in less than optimal habitats.

Grazing practices and recreational activities are not likely to adversely affect grey wolf or Canada lynx populations within NFMGMA. Consequently, there are no violations of the Endangered Species Act (Section 7) and consultation with the USFWS is not necessary.

Terrestrial special status vertebrate species and other species of interest likely to inhabit NFMGMA are listed below. Species associated with shrub steppe habitats that have declined substantially in the Interior Columbia Basin

Ecosystem Management Project (ICBEMP) area since historical times are denoted with an asterisk (*). FT = Federal Threatened; BT = Bureau Tracking species; BA = Bureau Assessment species.

Landbirds Northern goshawk, ferruginous hawk, Swainson's hawk (BT), pileated woodpecker (BT), spruce grouse (BT), northern pygmy owl, greater sandhill crane (BT), Lewis' woodpecker, long-billed curlew (BT), flammulated owl, white-headed woodpecker, black-backed woodpecker, three-toed woodpecker, pine grosbeak (BT), broad-tailed hummingbird (BT), pygmy nuthatch, Williamson's sapsucker (BT), great grey owl (BT), *Brewer's sparrow, *horned lark, *western meadowlark, *black-throated sparrow, *sage sparrow, *loggerhead shrike (BT), *sage thrasher, *greater sage grouse (BA), and northern bald eagle (FT).

Mammals Townsend's big-eared bat, silver-haired bat (BT), white-tailed jackrabbit (BT), long-eared myotis (BT), Yuma myotis (BT), Preble's shrew (BT), grey wolf (FT), Canada lynx (FT), pallid bat (BA), hoary bat (BT), California myotis (BT), fringed myotis (BA), pygmy rabbit (BA), river otter, pronghorn, mule deer, and Rocky Mountain elk.

Reptiles Northern sagebrush lizard (BT), desert horned lizard (BT), longnose leopard lizard (BT), and western ground snake (BT).

ASSESSMENT CRITERIA FOR WILDLIFE AND SPECIAL STATUS SPECIES (RANGELAND HEALTH STANDARD 5 - NATIVE, T&E, AND LOCALLY IMPORTANT SPECIES)

NFMGMA wildlife habitats were evaluated in relation to the SEORMP, which described a variety of desired habitat conditions and management considerations that, when met, would result in the support of healthy, self-sustaining populations and communities of wildlife on public land. These attributes of riparian and upland habitats described in SEORMP FEIS, Appendix F, are to be assessed periodically within each GMA and then used as the basis for determining conformance with Rangeland Health Standard 5.

Upland habitats

Wildlife diversity and productivity is profoundly influenced by the relative abundance, structure, and spatial arrangement of sagebrush and mountain shrub communities (Graph 1, "Comparison of Crested Wheatgrass Grasslands to Big Sagebrush Shrublands"), and by green tree replacement (GTR), snag retention, recruitment, and amount and spatial arrangement of downed woody debris in forested habitats.

Management of sagebrush communities appropriate to soil, climate, and landform needs to incorporate the following overstory and understory components that contribute toward healthy wildlife habitats:

Shrub overstory: Big sagebrush, low sagebrush, and other shrubby species within the genus *Artemisia* provide wildlife habitat structure, food, and cover.

Herbaceous understory: Grasses and forbs provide wildlife habitat structure, food, and cover. Herbaceous cover also produces insects that are consumed by birds and other small animals.

Management of mountain shrub communities appropriate to soil, climate, and landform needs to incorporate the following overstory and understory components that contribute toward healthy wildlife habitats:

Overstory: Ponderosa pine, Douglas fir, grand fir, and other tree species occur in multi-aged stands to provide wildlife habitat structure, food, and cover. Snags, down woody debris, and endemic insects are well distributed within forested areas.

Herbaceous understory: Grasses, forbs, and shrubs provide wildlife habitat structure, food, and cover. Herbaceous cover also produces insects that are consumed by birds and other small animals.

Sagebrush upland management criteria suitable for Rangeland Health assessments for wildlife habitat values (SEORMP, Appendix F, and Section F-5) are described below. See Table F-1, "Shrub Cover Canopy Classes" in the SEORMP for a description of sagebrush canopy cover Classes 1-5.

Shrub structural characteristics and general distribution at mid landscape scales (GMAs).

Shrub cover capable of supporting life history requirements of sage grouse and other wildlife (for example, Classes 3, 4, and 5), that use sagebrush habitats should be present at multiple spatial scales, over a large

area, and in a variety of spatial arrangements, e.g., at a landscape level and with connectivity present. Shrub cover should include a central core of sagebrush habitat present in large contiguous blocks as well as some other habitat arrangements such as islands, corridors, and mosaic patterns. Each of these patterns has significance to wildlife within geographic areas. Shrub cover should be some mix of height and age classes but with an overall emphasis on shrub communities with a mature structural status (Maser et al. 1984).

Big sagebrush shrub cover on native range at fine landscape scales (pastures).

Where a native range pasture is capable of supporting a big sagebrush community, shrub overstories suitable for sage-grouse, and other sagebrush-dependent species should be present on at least 50 to 75% of the pasture. For example, a 1,000-acre native range pasture that can support Wyoming, mountain, or basin big sagebrush should provide adequate wildlife shrub cover on at least 500 to 750 acres, in Shrub Classes 3, 4, and 5.

Big sagebrush shrub cover on seeded range at fine landscape scales (pastures).

Where a seeded pasture is capable of supporting a big sagebrush community, shrub overstories suitable for sage-grouse, and other sagebrush-dependent species should be present on at least 25 to 50% of the pasture. For example, a 1,000-acre seeded pasture that can support Wyoming, mountain, or basin big sagebrush should provide adequate wildlife shrub cover on at least 250 to 500 acres, in Shrub Classes 3, 4, and 5.

Herbaceous understory on native range at fine landscape scales (pastures).

Herbaceous understory composition throughout most native range habitats should exhibit a diversity of native forbs and grasses consistent with site potential at mid, late, or potential natural community (PNC) seral stages.

Herbaceous understory on seeded range at fine landscape scales (pastures).

In seedings, herbaceous cover should include one or more forb species.

Quaking aspen and mountain shrub upland management criteria suitable for Rangeland Health assessments for wildlife habitat values (SEORMP, Appendix F, Section F-3) are described below.

Quaking aspen (apart from riparian habitats) and mountain shrub species.

Mountain shrubs and aspen should exhibit healthy growth forms, structure and plant vigor. Uneven-aged stands of quaking aspen and mountain shrubs should be prevalent, and grazing systems should include rotations that allow for seed production and seedling establishment. Grazing systems also need to allow for the likelihood of maintaining or improving forage, cover, and structural features important to game and non-game species.

Conifer forest management criteria suitable for Rangeland Health assessments for wildlife habitat values (SEORMP, Appendix F, Section F-8) are described below.

Forest structural characteristics at mid landscape scale (GMAs).

Multi-aged stands of fir, western larch, and pine between 30 and 60 acres in size are desirable for wintering Rocky Mountain elk and mule deer. Snags should be located evenly within stands, with green tree replacements of various sizes available. Down woody debris should be present in amounts not less than 10 logs/acre or 10 tons/acre.

Western juniper management criteria suitable for Rangeland Health assessments for wildlife habitat values (SEORMP, Appendix F, Section F-7) are described below.

Western juniper woodland structural characteristics at mid landscape scales (GMAs). Where appropriate, patches of western juniper should be retained to provide thermal and hiding cover for mule deer and rocky mountain elk. In sagebrush-steppe rangelands, juniper presence should be limited to areas not likely to be occupied by sage grouse, or to areas historically occupied by juniper with appropriate soils, landform, and climate.

Western juniper woodland structural characteristics at fine (pasture) scales.

Western junipers 24 inches in diameter or larger, measured 1 foot above the ground, with nests or hiding cavities should be maintained at the project level for small mammals and birds. Downed trees should be maintained (as appropriate with respect to fuel loads for the site) for small animal refugia and big game hiding cover, and vegetation mosaics within project areas should be planned so that the result of treatment provides the necessary patch size and juxtaposition of juniper habitat and grassland/shrub habitat for area wildlife and with respect to connectivity with adjacent habitats.

Riparian habitats

At a minimum, grazing use needs to be consistent with providing those conditions that are necessary to promote properly functioning riparian/wetland areas (SEORMP, Appendix F, p. F-4).

RANGELAND FRAGMENTATION AND EFFECTS ON WILDLIFE HABITAT

Wildlife habitat fragmentation in sagebrush steppe is a concern throughout the intermountain west, and it is highlighted as an issue in the SEORMP. Habitat fragmentation impacts to species such as greater sage grouse can be caused by a variety of factors such as physical disturbance to plant communities, by wildfire or land treatments, powerlines, roads, western juniper encroachment, and fences. In this NFMGMA assessment, fragmented habitats are defined as rangelands with Shrub Cover Class 1 or 2 (SEORMP, Appendix F, Table F-1). These seeded or native rangelands exhibit a strong grassland or juniper woodland appearance (with either perennial or annual vegetation) and lack the shrub structure necessary to provide wildlife life history functions such as foraging, nesting, hiding, and thermal relief. Site potential and presence of invasive species may affect the capability of Class 1 or 2 areas to support a complete array of native plant components without management intervention such as juniper removal or seeding.

Fragmentation may have significance at very fine scales (tens of acres) for some species where surrounding rangelands have already suffered losses in shrub structure and remaining sagebrush steppe habitat is in limited supply. Fragmentation at a scale of thousands of acres can threaten native wildlife such as greater sage grouse and sage sparrows since both species require large areas of connected shrub overstory. Both species have declining population trends within the Interior Columbia Basin area.

Fragmented habitats do not always pose a threat to sagebrush steppe wildlife, as they are simply one stage of ecological succession with both positive and negative impacts on the life histories of wildlife. Fragmented habitats may in fact be desirable and provide the requirements for species such as grasshopper sparrows and pronghorn. Fine scale habitat mosaics are desirable in that they can provide an abundance of plant-based resources used by wildlife.

The size, spatial arrangement, and likelihood of further fragmentation of Class 1 and 2 habitats define potential risks and impacts to wildlife within areas capable of supporting sagebrush steppe habitats.

OVERVIEW OF NFMGMA WILDLIFE HABITAT CONDITIONS

Uplands

Upland communities within NFMGMA show attributes that cannot be expected to result in the long-term persistence of terrestrial wildlife, including greater sage grouse and a wide variety of other animals that occupy sagebrush, mountain shrub, or forested habitats for all or a portion of their life cycle. These undesirable conditions are not in conformance with the SEORMP.

Important sagebrush steppe wildlife habitat components, which include forage, cover, and structure, are not well distributed spatially across the assessment area. The structure and composition of plant species in the GMA are insufficient to sustain healthy, reproducing communities of wildlife. With some exceptions (see Specific Upland Wildlife Habitat Assessment Results), the structure and continuity of sagebrush communities, and species composition and structure of forested habitats is lacking for wildlife. Potentially negative consequences of habitat fragmentation from western juniper invasion, the lack of fire in forest communities, and vegetation treatments (e.g., seedings and chemical applications) over the last four decades are widespread in the evaluation area.

NFMGMA public land habitats consist of approximately 104,500 acres of a mix of Wyoming, mountain, and basin big sagebrush. Of this acreage, approximately 69,500 acres (approximately 66.6%) are being impacted by western juniper encroachment. Also present are approximately 5,900 acres of forested communities and 20,103 acres of low

sagebrush communities, mountain shrub, juniper woodland, and other habitats. Of these other habitats, it is estimated that approximately 9,500 acres (approximately 47.2%, which excludes old-growth juniper sites) are impacted by encroaching western juniper.

About 87% of all Wyoming, mountain, and basin big sagebrush public land range sites in NFMGMA, whether they have been seeded to crested wheatgrass or not, are currently Class 3, 4, or 5 wildlife habitats as described in the SEORMP, Appendix F, Table F-1. In other words, they are complex, native, or non-native shrubland communities capable of providing shrub-based habitat values including forage, cover, structure, and security vital to greater sage grouse and other shrub-dependent species of wildlife. Based on fundamental principles of rangeland science, these are areas where a long period of time has elapsed since wildfire or land treatment disturbance.

In contrast, 13% of all big sagebrush range sites in NFMGMA are currently Class 1 and 2 wildlife habitats, also described in the SEORMP, Appendix F, Table F-1. These are grassland habitats that were formerly shrublands in Class 3, 4, or 5, but they have been changed as a result of wildfire, western juniper invasion, or various forms of BLM land treatment. When big sagebrush range sites are disturbed by fire, western juniper invasion, or land treatment, they change temporarily into grassland habitats or closed-canopy woodlands and their values to wildlife also change dramatically depending on the distribution and extent of disturbance. The potential consequences and significance of grassland and juniper woodland conditions have already been described in the previous section under Rangeland Fragmentation and Effects on Wildlife Habitat.

Composition of the herbaceous understory in most native range is diverse, made up of predominantly native species with specific site capabilities determined by soil, climate, and landform. In western juniper invasion areas, understory diversity and density is relatively weak with respect to site capability. As western juniper stands form closed canopy woodlands, understory vegetation and components necessary for reclamation to shrub-steppe habitat conditions are lost and potentially replaced by other invasive species such as cheatgrass.

“Thorough search” grazing use, which can have potentially negative influences on wildlife by reducing hiding cover for small animals and forage availability for wildlife, is generally limited within the assessment area. Poor shrub structural quality, such as umbrella-form shrubs with heavily grazed understories (USDI BLM1996) caused by livestock use, was observed in some big sagebrush patches found within the area. Generally however, impacts from grazing were confined to areas close to water sources.

Streams and Meadows

NFMGMA supports an extensive network of dry and wet meadow complexes. Some wet meadow habitats showed heavy livestock utilization, leaving little residual cover available in the fall. For the past few decades, summer and fall grazing use has been authorized annually in higher elevation areas where riparian habitats are most abundant.

Western juniper encroachment into stream, meadow, and aspen communities is currently impacting habitat effectiveness for area wildlife. While junipers provide increased opportunity for nesting of numerous avians and provide thermal cover, they also provide hiding cover for predators. Without management intervention in appropriate areas, woodland conditions will dominate, and opportunities for re-establishment of historic habitat structure and composition will be lost.

Pronghorn, mule deer, elk, and other wildlife also utilize riparian areas but due to their current low numbers, big game has significantly fewer impacts on riparian areas than domestic livestock.

In most meadow areas, plant community composition is diverse and comprised of grasses, sedges, rushes, and forbs. Invasive and noxious plant species are limited in their presence and dominance. Nevertheless, rest and/or other seasonal grazing adjustments that avoid repeated summer use are needed to promote revegetation of bare banks and improvement in plant vigor and composition.

Quaking aspen occur in many areas throughout the GMA, with many stands lacking reproduction and desirable condition. Many aspen stands are at risk due to canopy closure from adjacent conifers or invasion by western junipers.

Woody riparian habitat quality and structural character varied significantly by stream. Refer to Appendix H and Appendix C of the Draft EA for specific information. Some isolated water sources that support aspen and are accessible by livestock (in both wet meadow and stream habitats) were heavily utilized and trampled. These areas show highly modified aspen and willow growth forms consistent with severe hedging as described in the Cole browse monitoring methodology.

Western Juniper Woodlands

Current distribution of western juniper within the assessment area is likely due to fire suppression and grazing effects on historic shrub-steppe rangelands. Historically, junipers occurred in sparse stands situated on ridges and rocky areas where the loss to periodic fire was lessened. While junipers provide nesting habitat for avians, and cover and thermal relief to wintering elk and mule deer, the impact of their encroachment into mountain shrub, conifer, and sagebrush areas is currently limiting the suitability of many habitats within the assessment area for wildlife. The risk of loss of crucial habitat components and habitat connectivity for a number of species exists with the current extent of juniper invasion within NFMGMA.

Forests

Forested habitats within the assessment area exhibit an overabundance of downed woody debris, likely a product of fire suppression efforts. Fuel loading and the risk of catastrophic fire in many of these stands potentially limit the long-term sustainability of desired habitat conditions for forest-dependant wildlife. While many areas supported a desired complement of species in multiple age classes, the suitability of these habitats for wildlife in the future may be limited as shifts in species composition, understory conditions, and age structure of the stands deteriorate the quality of the area for dependant wildlife.

Western juniper invasion into existing stands of pine and fir were noted in many areas throughout the assessment area. With increased prevalence of western juniper within existing stands, it can be expected that understory composition will degrade, as will the competitive ability of desired conifers. With limited recruitment of desired species, habitat conditions would be less able to support sensitive and locally important species in the long term.

Mountain Shrubs

With some exceptions, mountain shrub communities within the assessment area supported healthy stands of desired species that exhibited healthy growth forms and were comprised of multiple age classes. The assessment identified western juniper as a significant risk to many of the area's mountain shrub communities. Treatment options may be limited in these areas due to the need to maintain adequate winter browse for Rocky Mountain elk and mule deer and to provide forage for small mammals and birds. Treatments must be planned to account for forage retention, as well as provide adequate thermal and hiding cover appropriately juxtaposed across the landscape.

Of particular concern throughout the unit was the lack of regeneration in mountain mahogany stands, with many young plants showing evidence of heavy browsing and undesirable growth forms, and many older trees with decadent canopies at the time of assessment. Some stands were being invaded by western juniper; however, the lack of regeneration, decadence, and poor growth form of many plants could not be caused solely by this encroachment. While not specifically measured, it is speculated that wildlife and livestock browse of mountain mahogany throughout the year, in conjunction with western juniper encroachment and drought, have impacted these habitats through time. Since the time of the field assessment, elk populations in the area have been significantly reduced due to increased harvest. In 2005, field visits indicated an increase in reproduction and young plants with little evidence of browsing, indicating that reduced wildlife populations are currently having less impact on browse species in the area.

SPECIFIC UPLAND WILDLIFE HABITAT ASSESSMENT RESULTS

Native Uplands

Wyoming big sagebrush communities occupy about 80% (104,490 acres) or more of NFMGMA. Mesic zone (> 10 inch precipitation) Wyoming, mountain, and basin big sagebrush variants were observed, as were stiff sagebrush and low sagebrush habitats.

Mesic Wyoming big sagebrush communities mostly exhibited fine scale patchiness comprised of co-mingled shrub cover Classes 3 and 4. In the GMA, Wyoming big sagebrush canopy cover ranged between 5% and 25%. Heavier sagebrush canopies were considered to be between 15% to 20% cover, while lighter

canopies were between 5% and 10% cover. These arrays of cover densities provide both shrub cover and quality herbaceous understories that support communities of shrub steppe wildlife.

Many mesic Wyoming big sagebrush communities also showed heterogeneous shrub ages, densities, and canopy heights that were desirable for wildlife forage and habitat structure. Sage grouse nesting and wintering cover was abundant, but was spatially disconnected, and many areas were impacted by western juniper.

Low sagebrush communities occupied the highest elevations, especially regions along Bendire Ridge and Stemler Ridge. Low sagebrush communities were comprised of a combination of shrub cover Classes 3 and 4. Low sagebrush communities typically supported a robust and diverse understory of grasses and forbs that are of value to nearly all species of terrestrial wildlife.

Mountain sagebrush communities are abundant in NFMGMA. Mountain sagebrush canopy cover appeared to be primarily within the 20% to 30% plus range, in shrub cover Class 4 and 5. No line intercept or shrub height measures were taken in mountain sagebrush communities.

Based on vehicle reconnaissance, it was noted that there are many areas of low sagebrush types that also support subdominant communities of tall sagebrush (mountain, basin big, stiff, and Wyoming big sagebrush). Many of these “nested” habitat types are particularly valuable for sage grouse nesting and escape cover. They are also excellent habitat patches for landbirds such as sage thrashers, gray flycatchers, and loggerhead shrikes. These species were frequently flushed from tall sagebrush cover during the assessment process.

Basin big sagebrush communities occupied many low elevation drainages including the Malheur River, North Fork Malheur River, Bendire Creek, and Willow Spring Creek. They generally occurred in narrow and often discontinuous patches of deeper soils. Soil and vegetation inventory data did not delineate basin big sagebrush communities, and they were not mapped in the assessment process. Canopy cover within these communities was not measured, but based on visual estimates cover appeared to be 25% or more in Classes 4 and 5. Basin big sagebrush communities typically showed well connected overstories but generally tended to have weak herbaceous understories, presumably from historic grazing practices and diminished site capability.

Antelope bitterbrush and mountain mahogany communities are extensive in many areas within NFMGMA. These communities occurred in 48 of 107 pastures within the assessment area. Many of the lower elevation stands of antelope bitterbrush and mountain mahogany are important winter foraging areas for mule deer and elk. Pastures such as Juniper Gulch and Pete’s Mountain provide wintering deer and elk with thermal relief cover in western juniper stands intermingled with stands of bitterbrush and mountain mahogany on south facing slopes. While western juniper thermal cover is important for wintering elk and deer, juniper encroachment into antelope bitterbrush and mountain mahogany sites can limit their productivity and long-term persistence without management intervention.

Forested communities exist in mid to upper elevation areas within NFMGMA and consist of multiple conifer species. Ponderosa pine stands in the assessment area exist on dryer sites at mid elevations. Currently, many of these stands are being invaded by juniper and/or Douglas fir.

Seeded and chemically treated uplands

Seedings and brush control projects have influenced about 5,400 acres, or approximately 4% of NFMGMA. Most existing land treatments occurred during the Vale Project era between the early through the mid-1960s. In contrast to other rangeland within Malheur County, NFMGMA has sustained a relatively small proportion of land treatment disturbance. Class 1 and 2 crested wheatgrass rangelands support substantially fewer species of wildlife in comparison to native shrublands (Graph 1, “Comparison of Crested Wheatgrass Grasslands to Big sagebrush Shrublands and Wildlife Use”).

Only two of the NFMGMA seedings were planted with forbs (Beulah Seeding and seedings at Agency Ridge), but only seedings at Agency Ridge currently meet the minimum wildlife habitat standard for forb composition in seedings specified in the SEORMP.

Horse Flat Brush Control, Castle Rock Allotment (2,773 acres chemically treated with 2-4D in 1963). Approximately 67% of Castle Rock Pasture was sprayed in 1963. This brush control project exhibited a shrub cover Class 3 aspect with approximately 6 - 15% canopy cover of sagebrush. The Horse Flat Brush Control comprises approximately 3% of NFMGMA BLM acres, and thus wildlife habitat values are impacted only locally. There are no recent burns or seedings nearby that would increase the impacts of grassland habitat conditions in the area.

Beulah Seeding, Agency Mountain and Beulah Reservoir Allotments (1,150 acres were burned and seeded in 1960, out of 6,811 total pasture acres). Big Seeding, Little Seeding, Scab, Water Gulch, and Agency Mountain Pastures were treated. The seeded area had substantial post-treatment shrub overstory recovery with shrub cover from 6 - 15%, and would provide some wildlife habitat.

Poverty Flat Brush Control, Beulah Reservoir Allotment (1,050 acres chemically treated (sprayed) with 2-4D in 1963), The treated area showed substantial post-treatment shrub recovery (shrubs cover of 6 - 15%) and currently could support wildlife that use sagebrush habitats if western juniper was treated. Sagebrush canopy character (volume, maturity, height, and ability to conceal animals) in the treated area was a lower quality than on untreated range due to the young age of the plants and physical disturbance from concentrated livestock grazing use. Gray rabbitbrush was also found in the pasture (6 - 15% canopy cover) indicating early seral conditions.

Beulah Seeding, DeArmond Murphy Allotment (460 acres plowed and seeded in 1966). Beulah Seeding showed a substantial post-treatment shrub canopy recovery and supported a heterogeneous mix of Class 3, 4, and 5 shrub cover types. Sagebrush canopy character (volume, maturity, height, and ability to conceal animals) in the treated area was lower quality than on untreated range due to the young age of the plants and physical disturbance from concentrated livestock grazing use. Sagebrush cover in Beulah Seeding ranged from 6 to 30 % canopy cover.

General livestock utilization patterns and extent of use by livestock observed

Livestock utilization levels and impacts to wildlife habitat vary from year to year depending on a variety of factors. Nevertheless, it is possible to get a general sense of recent historical grazing patterns and how they may be influencing wildlife habitat, by looking at factors such as residual cover, fence-line contrasts, trampling effects, plant composition, and shrub canopy conditions.

Substantial livestock grazing use impacts in NFMGMA uplands are typically confined to areas within ¼ mile or less of developed and natural water sources. Because most NFMGMA pasture units are quite small, natural water is somewhat limited, and stocking rates have been moderate, livestock use has occasionally resulted in thorough understory search in some pastures. Consequently, the forage, structure, and cover values associated with herbaceous plants have occasionally been scarce and unavailable for wildlife to use.

Exceptions to the generally favorable patterns of livestock utilization observed in NFMGMA include the following:

- Terrace uplands adjoining streams and meadows (such as Jerry Canyon) showed signs of high livestock utilization and generally weak understory conditions.
- Livestock utilization around troughs was particularly severe, but the overall impacts of this use were limited in spatial extent, and as impact to wildlife cover and forage values. No invasive weed species were observed in these severely used areas, but they would be vulnerable to noxious and invasive weeds over the long term.

BIG GAME FORAGE DEMAND

Refer to SEORMP Appendix F, Section F-10 "Calculation of Big Game Forage Demand", for an explanation about the origin and calculation of forage demand for mule deer, elk, and pronghorn.

The current seasonally adjusted competitive forage demand for big game at state management plan objective levels is as follows:

Table 10. Big Game Forage Demand

Allotment	Pronghorn			Mule Deer			Elk		
	#	Season	Competitive AUMs	#	Season	Competitive AUMs	#	Season	Competitive AUMs
Agency Mountain	25 0	Summer Winter	20	92 117	Summer Winter	48	28 30	Summer Winter	262
Allotment # 6	0		0	150 200	Summer Winter	71.3	10 20	Summer Winter	21
Beulah Reservoir	25 0	Summer Winter	2.1	275 350	Summer Winter	127.4	85 100	Summer Winter	129.5
Bridge Creek	15 50	Summer Winter	5.6	200 355	Summer Winter	112.1	25 25	Summer Winter	35
Butte Tree	0		0	35 10	Summer Winter	9.2	20 0	Summer Winter	14
Calf Creek	0		0	91 116	Summer Winter	47	28 30	Summer Winter	262
Castle Rock	10 0	Summer Winter	0.9	125 50	Summer Winter	35.7	100 0	Summer Winter	70
Chukar Park	25 0	Summer Winter	2.1	25 75	Summer Winter	20.4	15 15	Summer Winter	21
Cottonwood Creek	10 0	Summer Winter	0.9	25 5	Summer Winter	6	15 10	Summer Winter	17.5
Dearmond Murphy	25 0	Summer Winter	2.1	450 250	Summer Winter	142.6	30 50	Summer Winter	56
Ironside Mountain East	50 50	Summer Winter	8.6	300 0	Summer Winter	61.1	75 0	Summer Winter	52.5
Ironside Mountain West	0		0	75 0	Summer Winter	15.3	25 0	Summer Winter	17.5
Kivett	0		0	50 0	Summer Winter	10.2	15 0	Summer Winter	10.5
Lockhart Mountain	15 0	Summer Winter	1.3	75 10	Summer Winter	17.3	15 0	Summer Winter	10.5
Malheur River	0		0	30 15	Summer Winter	9.2	5 0	Summer Winter	3.5

Allotment	Pronghorn			Mule Deer			Elk		
	#	Season	Competitive AUMs	#	Season	Competitive AUMs	#	Season	Competitive AUMs
Ring Butte	10 0	Summer Winter	0.9	100 0	Summer Winter	20.4	50 0	Summer Winter	35
Squaw Butte	0		0	25 5	Summer Winter	5.1	10 0	Summer Winter	7
South Willow Creek	10 0	Summer Winter	0.9	75 0	Summer Winter	15.3	20 0	Summer Winter	14
Whitley Canyon	5 0	Summer Winter	0.4	100 150	Summer Winter	50.9	45 25	Summer Winter	49

Based on the general habitat conditions observed, upland habitats (exclusive of meadows) are providing more than enough forage to sustain and support healthy elk, mule deer, and pronghorn populations. Summer and fall forage availability for wildlife using upland meadows and riparian habitats is being significantly limited due to livestock grazing. This situation could be remedied by incorporating periods of rest or removing livestock earlier so re-growth of vegetation in meadows and riparian areas may occur.

In the near future, there will be a need to adjust big game forage demand figures disclosed in the SEORMP, as the ODFW has proposed changes in their management objectives that will require an adjustment in forage demand for elk and deer. Pronghorn management objectives are not currently under review, and it is anticipated that no changes will be needed in the forage demand detailed in the SEORMP. When ODFW finalizes their management objectives, the big game forage demand figures will be addressed, separately from the effort to meet S&Gs.

SELECTED TERRESTRIAL WILDLIFE SPECIES ACCOUNTS

Greater sage grouse

Over 30% of the assessment unit provides sagebrush canopy cover that meets sage grouse nesting or wintering requirements. Herbaceous understory composition in nesting and brood rearing habitats was sufficient to provide abundant plant and probably insect food sources for sage grouse.

Breeding and Brood Rearing Habitats - Sage grouse breeding and brood rearing habitat in NFMGMA is non-productive relative to other geographic areas within Malheur County. Based on 2001 data, there are eight sage grouse leks located within NFMGMA. Nine additional leks are found to the east of the GMA within a two-mile distance of the boundary. Lekking habitat occurs near Bendire Ridge, Castle Rock, and north of Ironside Mountain (Map 8, "Fish Bearing Streams and Special Status Species"). Of the eight other GMAs in Malheur Resource Area only the Sand Hills GMA has fewer leks, only two leks, within its boundary (Graph 2, "Number of Leks per GMA").

Spatial distribution of leks in NFMGMA tends to be more widely scattered than in other GMA's. The highest lek densities in Malheur County are associated with low sagebrush communities that are close to mountainous topography with abundant natural water sources. NFMGMA has the necessary relief and natural water sources, but, due to western juniper encroachment into sagebrush steppe habitats, it currently has fewer leks than adjacent highly productive habitats, e.g., Bully Creek GMA.

The best nesting and brood rearing areas in Malheur County are typically moist mid to upper elevation rangelands comprised of low sagebrush and mountain or Wyoming big sagebrush communities with a network of springs, meadows, and streams.

Winter range - No sage grouse winter survey data are available from NFMGMA. Sagebrush habitats are generally so poorly connected, and exhibit such an abundance of western juniper encroachment areas of significant size, that winter habitat availability for sage grouse appears to be lacking within NFMGMA. It

is likely that winter habitats occur elsewhere, and grouse migrate annually to and from the area, depending upon winter severity.

Landbirds (formerly known as Neotropical Migrants)

In addition to sage grouse, NFMGMA supports several birds that have been described as species of interest in the Interior Columbia Basin Ecosystem Management Project (ICBEMP) and the Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington (Altman 2000). These species include gray flycatcher, horned lark, sage thrasher, sage sparrow, brewer's sparrow, Lewis' woodpecker, red-naped sapsucker, Virginia's warbler, Northern goshawk, and ferruginous hawk.

Data from the USFWS South Ridge East and South Ridge West Bird Surveys are used as reference material for characterizing landbird presence and relative abundance in NFMGMA. Although there is not an identical overlap between these routes and the NFMGMA boundary, the habitat types surveyed on these routes are virtually identical to those present in the sagebrush steppe landscapes within NFMGMA. Based on these data, landbirds dependent upon sagebrush types are well represented in NFMGMA. Although no systematic bird surveys were conducted during this assessment, the species of interest were commonly encountered during summer fieldwork.

Mature shrub habitat structure, poor landscape connectivity, and generally favorable understory conditions in this unit likely account for fair diversity and relative abundance of sagebrush-associated birds. Landbirds of management importance were most abundant in mid to upper elevation sagebrush types and frequently associated with tall shrubs and canopy cover of 15% or more. These areas are typically associated with small changes in topography and aspect that foster the most productive and diverse steppe habitat conditions.

Based on general observations throughout the summer, raptors are common and diverse in NFMGMA. Although small rodent burrows were common, ground squirrels and black-tailed jackrabbits were not frequently encountered. In short, raptor mammalian food sources appear to be relatively limited in sagebrush steppe communities. However, in western juniper and forested types, chipmunks and squirrels were more abundant and were providing raptor food sources.

Pygmy Rabbit

NFMGMA likely supports pygmy rabbits along major drainages with tall sagebrush (basin big or Wyoming big sagebrush) and in mixed big sagebrush/low sagebrush areas. BLM pygmy rabbit surveys conducted in Lake and Harney Counties (Oregon) during 2002 and 2003 have revealed that substantial populations of pygmy rabbits are found in big sagebrush/ low sagebrush complexes not previously considered prime habitat for the species.

Reptiles

Several reptile species occupy NFMGMA habitats and were seen regularly during the course of the assessment. Site locations were recorded on field maps and entered into the District wildlife observations database, though standardized surveys were not conducted. Most GMA reptiles had no special status designation, indicating a widespread, common distribution. Some species were designated Bureau tracking, which is a status conferred on species for which more information is needed or which no longer need active management. BLM collects occurrence data on tracking species but does not consider them special status species for management purposes.

The northern sagebrush lizard, on the Bureau tracking list, is the only special status reptile likely to reside within the GMA. Sagebrush lizards are ground dwellers and inhabit open, brushy flats, using shrubs for cover, or hiding in rodent burrows. Except for crested wheat seedings and rimrocks, the GMA provides extensive areas of suitable habitat for sagebrush lizards, which were widespread and utilized sagebrush with a variety of canopy densities. However, this species does not inhabit seeded pastures. In an Idaho study investigating responses of sagebrush steppe reptiles to crested wheatgrass plantings, the relative densities of sagebrush lizards in seedings were significantly below those of ungrazed sagebrush/squirreltail habitats (Reynolds and Trost 1980). The study also showed that lizard densities on sagebrush habitats grazed by sheep were not different from the ungrazed sagebrush, suggesting that upland livestock use in NFMGMA may have little impact on these reptiles.

Western fence lizards and side-blotched lizards tend to be restricted to rocky habitats with a vertical component, such as cliffs, boulders, and rimrocks. In the GMA, these lizards were found along rock canyons such as Juniper

Gulch and the North Fork Malheur River and were absent from open sagebrush flats. NFMGMA provides suitable habitat for these species.

Other lizard species may occur in the GMA but have not been observed. Mohave black-collared lizards (Bureau tracking list), which require sparsely vegetated, rocky slopes, are documented in the Sheephead Mountains, near Burns Junction, and in the Owyhee River canyon. Western whiptail lizards utilize a variety of sagebrush and rocky habitats and occur in the Owyhee River Canyon, but have not been observed in NFMGMA.

Wandering garter snakes occupy riparian and aquatic habitats and were abundant in the GMA. See Section 4.13, “Aquatic Species and Habitats”, for the species account.

A few gopher snakes and western rattlesnakes were observed during the assessment, but no systematic snake inventories were done. Both species typically inhabit dry upland areas that are sparsely vegetated but which must include rocky denning sites. There is no indication that current upland grazing levels in the GMA impact habitat of these snakes.

Other snake species may occur in NFMGMA. Racers are documented from sagebrush steppe habitats and may occur within the GMA. The western ground snake, a Bureau tracking species, is small and secretive and may be overlooked, but is generally found at elevations lower than the GMA.

4.15 Cultural Resources

PREHISTORIC LIFEWAYS OVERVIEW

This GMA lies between the cultural interface of the Northern Great Basin and the Columbia River Plateau. For the Northern Paiute of Burns, Fort McDermitt, and Warm Springs Indian Reservations, this area is significant to their cultural heritage. The cultural heritage of American Indian peoples is reflected in the variety of site types found within this GMA. Campsites, rock art, rock alignments, toolstone quarries, and plant gathering areas all testify to the diversity of resources utilized by people before and after the arrival of white Europeans.

PaleoIndian Period 13,000 to 11,000 years ago

The PaleoIndian Period from 13,000-11,000 years ago is characterized by Clovis and Folsom projectile points and a blade and core technology that characterizes big game hunters. The majority of the sites that reflect this culture are located in the Plains and southwestern United States and are much less evident in the Great Basin and Columbia Plateau. Sites associated with this culture’s tradition in the Great Basin are located on or near lakes or marshes where waterfowl, fish, and water plants were present. Across the Great Basin, the Clovis fluted point technology has been identified at several locations. At the East Wenatchee Site in Washington artifacts in direct association with volcanic ash deposits have been dated to 11,250 years ago (Mehring 1988; Mehring 1990).

Pluvial Lakes Tradition 11,000 to 8,000 years ago

Within the Great Basin, the period from 11,000-8,000 years ago represents the climax of cultural development in the Fort Rock Basin (Cressman 1986, 122). Woven sandals from Fort Rock Basin date to this time period. The lithic technology of this period is characterized by seven different projectile point styles. The Folsom point continues from the previous period, and larger, un-notched points with basal grinding have been added. The diversity in projectile point styles suggests not only an improvement in lithic technology but also experimentation with hafting methods.

On the Columbia Plateau, western glaciers receded as a climatic warming and drying trend continued. Pleistocene lakes began to recede and the forested lands changed to a juniper/sagebrush steppe and grassland. Native people began to move into the mountains and to use the resources available at higher elevations. In the Strawberry Mountains, Strawberry Obsidian was quarried for the first time. The culture is typically “Hunter and Gatherer,” small family groups following resources from one location to another as they become available.

Early Archaic Period 8,000 to 5,000 years ago

From 8,000 to 5,000 years ago the postglacial warming and drying reached a peak, and a moderate reversal of this trend established a climate roughly like that of today. Many of the lakes that dotted the Great Basin dried up, including most, if not all, of those in Harney County. While the John Day and Malheur Rivers never dried up, they

probably carried less water and supported greatly reduced marshes. The grasslands and juniper/sagebrush steppe would have greatly expanded as seed and root plants such as bitterroot, biscuitroot, camas, and onion increased in abundance. The eruption of Mount Mazama 5,050 years ago covered thousands of square miles with a thick lens of fine textured ash.

During this period, there is a decrease in the use of rock shelters. People appeared to move from lower elevation lake sites to higher elevation spring sites seeking refuge in the mountains as the climate became hotter and drier (Fagan 1974). The Columbia Plateau people based their survival on riverine resources that were less severely affected than the lakes and marshes exploited in the Great Basin. The cooler and moister Strawberry Mountains, Castle Rock, Sheepheads, and Steens Mountain areas contained reliable spring sources that sustained a diverse vegetative community and a refuge for wildlife and upland game species seeking cooler temperatures.

The tool kit now includes projectile points that are corner-notched and classified typologically as the Northern Side-notched, Humboldt Concave Base, Pinto series, Elko Eared, and Gatecliff series. The preferred lithic material for projectile points and lithic artifacts shifts from basalt to obsidian. Manos and metates, used to grind seed for food, are much more common in archaeological sites, indicating that the people gathered and prepared labor-intensive seed and root crops.

Middle Archaic Period 5,000 to 2,000 years ago

Between 5,000 to 2,000 years ago, climatic conditions shifted again to warmer and moister conditions. Tree lines moved down the mountains with fir and pine becoming the dominant tree species. The grasslands and juniper/sagebrush steppe would have broadly resembled that of today. The pluvial lakes and marshes cycle from dry to massive to dry over short time frames.

The tool kit includes a slender corner-notched projectile point and shows a continuation of lithic technology from the previous period. The Northern Paiutes (or their Numic ancestors) expanded northward between 3,000 and 1,000 years ago. In the northern Great Basin, Catlow twine is now an important class of perishable artifact. Adovasio (1970 cf d'Azevedo, Warren L. ed. 1986) suggests "that the northern Great Basin is the place of origin for this textile tradition; at any rate it is the place of highest development." During this period, textiles are often found in association with grave goods.

Late Archaic Period 2,000 years ago to Contact

The bow and arrow were introduced into the area around 1,300 years ago as shown by the introduction of the smaller Rosegate, Desert series, Cottonwood Triangular, and Gunther Barbed points designed to tip arrows as opposed to atlatl darts. Hopper mortar bases and camas baking ovens indicate techniques of resource procurement used into modern times.

Families from dispersed winter villages began moving to the cooler uplands in the early summer after the anadromous fish runs. Camping sites in the same areas that their family had used for generations were re-established. Occasionally large groups of families would gather in the same location and share in special group activities like pronghorn and rabbit drives, collection and processing of certain plants (notably camas), and social activities like trading, gambling and dancing. Extensive trading networks, which may have started in the middle Holocene, are indicated by obsidian from Strawberry Mountain sources being located in sites far up the John Day River. Toolstone from the Owyhee River has been located at the Lost Dune site south of Burns. There was a corresponding increase in the quarrying and tool manufacture utilizing the Strawberry Mountain obsidian. Large upland valleys, such as Bear, Logan, and Fox, were used for large gatherings of people from different families and tribes where trade, communal hunting, and plant gathering, gambling and socializing took place. These gatherings were not only documented by European trappers and traders but were also named "rendezvous" by French fur trappers. Along the Mainstem and South Fork of the John Day River, pictographs may indicate one of the major trade and travel routes.

Overall, the prehistory of the Northern Great Basin and the Columbia Plateau regions reflects a long continuity and adaptive change to distinctive ecosystems with a changing climate. The persistence of lithic and textile traditions and subsistence patterns during these chronological periods support the theory of cultural continuity throughout the Northern Great Basin. The subsistence pattern was based on a broad spectrum seasonal round that utilized over 50

floral species, big and small game hunting, and fishing. With climatic changes came a shift in floral and faunal species and the appearance of species that characterize arid environments.

ETHNOHISTORIC AND ETHNOGRAPHIC LIFEWAYS OVERVIEW

Native American Cultures

At the time of historic contact, the Strawberry Mountain area represented both a cultural and physiographic boundary separating the Columbia Plateau peoples in the north from the Great Basin cultures further south. The clustered mountain ranges offered countless hills and tributary canyons from which abundant game animals and vegetable foods could be garnered. Evidence suggests that the region was exploited jointly by Columbia River and Northern Paiute groups whose lifeways depended heavily on seasonal rounds of procurement.

Plateau area bands exploiting the area north of the NFMGMA included the Umatilla, Cayuse, Walla Walla, and Western Columbia River Sahaptins. Permanent settlements were located on rivers, while temporary procurement camps assembled in close proximity to the resources being exploited. The Great Basin peoples that used the area to the south and west, including the project area, were the Northern Paiutes. Several significant subsistence sources near the project area were traditional gathering places of the bands including Crane Prairie, Summit Prairie, and the headwaters of the Malheur River. These intergroup meetings were a common means of organized resource procurement and involved a large number of people from a broad area.

Umatilla

The Umatilla occupied both sides of the Columbia River from Rock Creek nearly to the Walla Walla River. Subsistence was based on a seasonal round with the winters spent fishing, hunting, repairing equipment, and eating stored foods. As spring approached, they prepared their favorite fishing locations by building weirs, stone dams, platforms, and fish traps. The women and children collected fresh greens and roots to supplement the dried foods. When salmon runs began, family groups moved up the tributaries to the headwaters, camping along the streams as they went. They continued to catch fish, and hunt for deer, elk, pronghorn, roots, and berries. Their summertime wanderings took them into the Tenino territory and south of the John Day River.

Cayuse

The Cayuse homeland extended along the upper courses of the Umatilla and Walla Walla rivers, as well as that of the Grande Ronde, a tributary to the Snake River that takes its name from the large oval prairie in which it lies; to the north and east, the Cayuse inhabited areas along the Touchet and Tucannon (Stern 1998). Winters were spent along the Columbia at The Dallas and in late spring/early summer, family bands would move across the Blue Mountains into the Grande Ronde area to gather roots and hunt. Others groups would move with the Nez Perce to the clan gathering at Weiser before heading east to hunt bison.

Western Columbia River Sahaptins

The homeland of these peoples was located along the Columbia River upstream from The Dallas to Alder Creek (Hunn and French 1998). During the summer they foraged into the area around John Day and possibly into the Strawberry Mountains and may have traveled farther south in the area of the uplands surrounding Castle Rock. These people followed the same seasonal round pattern proposed for other Columbia River and Plateau peoples, for the procurement of resources as they became available. Roots provided the staple dietary basis and were supplemented by a variety of berries, fish, elk, deer, pronghorn, and bighorn sheep. Smaller animals were also hunted for meat, as well as upland game bird species.

Northern Paiute

Stewart (1939) identified the Walpapi, or Canyon City Indians, as making use of a large territory that included the Malheur Basin. The Hunipuitika (or Root Eaters) were located within the Canyon City/John Day area. They occupied a large area of 7,000 square miles, including the upper reaches of the John Day River and the Crooked River Valley, directly north of the Wada eaters who frequently joined them to pick huckleberries and hunt elk in the fall (Whiting 1950). The Hunipuitika, in turn, went south in the summer to pick wada with the Wadaitika around Malheur Lake and to gather crickets on Cow Creek. The seasonal cycle of the Northern Paiute was keyed to the availability of various subsistence resources. Winter camps of the Hunipuitika were established along the John Day River valley, in the vicinity of the present John Day and Canyon City townsites. Foraging continued for fresh food throughout the winter as stored food supplies dwindled, and fresh meats and vegetables were sought to provide variety to dried food diets.

The basic unit of Northern Paiute social structure was the small family group that allowed the needed mobility and flexibility for adaptation to the wide variety of seasonal resources. The settlements were of two types: village and camps. Winter villages of up to fifty huts have been reported, but generally, the winter villages consisted of small, unstable groups of about three families located near a major lake or river. Seasonal camps were located wherever there was water and food. Living structures were typically a fence-like windbreak of sagebrush for a temporary or summer camp with a tree or brush sunshade or domed wickiup for both winter and summer use.

The subsistence economy of the Northern Paiute was strongly oriented toward gathering and collecting because plant foods were more abundant and dependable than fowl, fish, or mammals. Mammals provided skins, furs, tools and many other by-products of aesthetic and practical value. Insects such as beetles, grasshoppers, locusts, crickets, ants and caterpillars were consumed, as well as most eggs and larva. In addition, historic documents indicate several hundred plants were used by the Indians of the Great Basin for medicinal purposes, fiber sources, and food.

Historic Lifeways

Sometime after 1730, horses obtained from the Spaniards were introduced to the Shoshone and Comanche and to the Cayuse, Nez Perce, and Umatilla Indian peoples. The adaptation to the horse culture occurred rapidly and is reflected in pictographs of horses and mounted riders. Wealth of an individual was measured by the number of horses; the poorest families had only a few, and conversely the wealthiest families may have had several thousand. Preceding the white European's exploration of the West was a smallpox pandemic that occurred in two waves, in 1780 and 1801. The cumulative mortality has been estimated to be as high as 45% of the population by the time Lewis and Clark arrived.

Fur Trade and Early Exploration 1811-1837

Exploration into this area began with the expeditions of John Jacob Aster, after he heard the stories from the Lewis and Clark Expedition of 1804-1806. Aster formed the Pacific Fur Company to capture the fur trade in the west. He sent a party by boat to build Fort Astoria and another party overland to explore the country, trap beaver, and carry the furs to Astoria.

The first written observations of southeastern Oregon can be found in journals kept by men involved in the expansion of fur trapping territory. In 1811, Wilson Price Hunt's party crossed the Snake River in the area of the Weiser River. Ramsey Crooks took 19 men and followed the south bank of the Snake River, through Malheur County and past Farewell Bend; however, after entering Hell's Canyon in November, the weather turned bad and they were forced to turn around and camp with Hunt at the mouth of the Weiser River. Eventually, the Hunt and Crooks parties made their way to Fort Astoria. In 1812, Crooks and Robert Stuart were sent east, backtracking the route of their westward journey. They camped opposite the Weiser River on August 13, 1812. Journal excerpts show that they had crossed the Malheur and the Owyhee Rivers.

During the 1820s, the Oregon Country was open to both American and British fur trappers. Because the Americans were not yet well established in the Malheur and Harney County areas, economic and political benefits prompted the British to extend their operations into and beyond this part of the Snake River Country. The British policy in the Northwest during this period was to devastate the country's beaver, thereby making the area unattractive for American enterprise.

By 1821, the Northwest Fur Company had merged with the Hudson's Bay Company, a venerable British firm. American trappers moved down the Snake River from the east, as far as the Weiser River and into the Owyhee River area by 1827. Over the course of five expeditions from 1824-1829, Peter Skene Ogden explored the Snake, Malheur and Owyhee Rivers, in addition to the western side of Malheur County, for the Hudson's Bay Company.

Beginning in the early 1830s, various American trapping, trading, and exploring parties traveled over what later became the Oregon Trail and ventured into interior Oregon. They reported to the government and people back home that the Oregon territory offered vast opportunities, thereby promoting American immigration, and settlement.

Immigration 1834-1860

The era of the fur trade provided the basis for American families to travel west. American trappers familiar with the routes were hired as guides, and in this part of the country the Hudson's Bay Company trading posts at Fort Hall and Fort Boise served as supply and rest stops.

The most famous of trails in this area is the Oregon Trail, the main corridor to travel from the early 1800's. On May 22, 1843, approximately 120 wagons with 5,000 head of loose stock left Kansas for Oregon. Marcus Whitman traveled with the wagon train and encouraged the people to continue into Oregon with the wagons, rather than abandon them at Fort Hall. The caravan split into factions and those that continued to western Oregon are credited with being the first to complete the crossing of the Oregon Trail and the first to cross Malheur County.

The Trail was a corridor of travel, widened with each crossing, as livestock needed grass and water for the journey. By the time the immigrants crossed the Snake River and made camp where Vale, Oregon is now located, they were tired, food was scarce and their clothes were ragged. They had been traveling since April through the dust and heat of the summer and now, in September or October as early winger frosts began, they still had the Blue Mountains to cross. For American Indians increased use of the Oregon Trail burdened grazing resources, killed off game, and displaced resident bands.

In 1845 Stephen Meek contracted to guide a train of 214 wagons up the Malheur River, into Harney County, then over to Wagon Tire Mountain and on to the Crooked and Deschutes Rivers. It was to be an easier route than over the Blue Mountains but it ended up in disaster for the travelers. Although Meek had been over the route as a fur trapper, he had never guided wagons over the route. Terrain easily traveled by mule, now delayed the wagons until a suitable route could be carved out. North of Beulah Reservoir is the grave of Sarah Chambers, an immigrant woman who died along this route. Her grave site is marked on the USGS quad sheet, and the grave is fenced.

In 1853 Elijah Elliot persuaded more than 1,000 people in 250 wagons to follow the old fur trail up the Malheur River and across Central Oregon to reach the middle Cascade Mountains. Unfortunately, those leading the caravan did not know the route in eastern Oregon very well and suffered the same hardships as the earlier party in 1845. Short on provisions, in October the wagon company discovered the eastern terminus of the Free Emigrant Road and started up the slopes of the Cascades. The Free Emigrant Road was improved in 1854, and William Macy successfully guided 20 wagons from the crossroads at the hot springs, with nearly 100 more wagons joining them, all reaching their destination without serious mishaps.

The National Trails Systems Act directed the Secretary of the Interior to prepare comprehensive management plans and adopt uniform Trail markers. In 1981, the National Park Service completed a management plan for the Oregon Trail that identified important components of the Trail and recommended measures for protection, interpretation, and marking of the route. Although the principle period of pioneer emigration spans the decades from 1840 to 1860, the primary route of heaviest emigrant travel was between the years of 1841-1848 (Oregon Trail Management Plan 1989).

Mining Activities 1849-1934

A great push for settlement of the west came in 1849 with the rush of gold seekers to California. It drained settlers from Oregon and diverted traffic from the Oregon Trail. Immigrants crossing Malheur territory on their way west dropped from 1,000 in 1848 to 500 in 1849. Ultimately, prospectors from California began spreading through the Pacific Northwest in search of new gold claims. Some found gold in southern Oregon in 1850.

In 1862, gold was discovered in Canyon Creek, and within 6 weeks, the town of Canyon City had a population of 5,000 miners. With additional discoveries of gold in other drainages of the John Day River, the towns of Prairie City and John Day arose. By 1864, gold was located in gold-bearing ground just west of Mormon Basin on the high ridge that separated the Burnt River from upper Willow Creek. The Shasta Mining District included the towns of Eldorado and Malheur City. The next mining town was known as New Diggings. The community of New Diggings was renamed Amelia City by 1867.

The Sunday Hill mine may have been the first mine to come into production as it began in 1868 with a small mill. The largest producer was the Rainbow Mine, which was first worked in 1901. After bringing it to full production, it operated from 1912-1919 with a fifteen stamp mill and cyanide plant. Lightning struck the mine and burned it down in 1923. When the great depression struck in 1930s, all large-scale activities ended after a brief effort to reopen the Rainbow mine in 1934.

From the start of mining activities in northern Malheur counties, water was the limiting factor. The Eldorado Ditch was constructed to bring water approximately 110 miles from Elk Creek in the upper Burnt River Drainage. The water was used to power giant hydraulics, directing a strong stream of water to flush mud and gravel through sluice boxes. The heavier gold bumped along the ridges of the sluices and lodged there. The assurance of water increased the populations in the mining communities, bringing stability until the gold played out.

The Eldorado Ditch was dug by Chinese contract crews, by hand. Altogether, the ditch drops only about 800 feet over its full length. Eleven miles of the ditch were constructed between 1863 and 1867. In 1869 local promoters got additional funding, and by the end of 1870 the ditch had been completed from Elk Creek to Malheur City. The stretch from Malheur City to Amelia was completed between 1870 and 1874. In 1911, Baker County farmers went to court to prevent water from being used in Malheur County. The court decision made the ditch impractical for further use, and it was abandoned.

Growth of Amelia City was affected by the lack of water. Miners exploited the local water supply by digging ditches. The Eldorado Ditch, now 136 miles long, could not supply water to the city of Amelia which was located at the end of the ditch. Malheur City lasted longer than most boom towns. People remained, and the presence of the livestock industry supported the town; the post office did not close until 1944. The last year of school was in 1954-55, and in August 1957, a devastating range fire destroyed the remaining buildings.

Military Activity 1849-1878

Prior to 1858, military activity in eastern Oregon was limited to providing escorts for immigrant parties on the Oregon Trail and to military exploration. In 1858, the Military Department of Oregon was established under the command of General William S. Harney, assuring military aid and protection for Euro-American expansion into previously hostile country. From 1864 to 1867, numerous military maps were completed, roads were constructed, and posts were established throughout eastern Oregon. The army's function was primarily to protect transport routes to the Owyhee Mines in the vicinity of Silver City, Idaho, and to protect civilian settlements.

By the end of General Crook's campaign in 1868, most American Indians in southeastern Oregon were confined to reservations. Some Paiutes accompanied the Fort Hall Bannocks in a brief uprising called the Bannock War of 1878 and, while much of the action occurred in central and northeastern Oregon, it ended with the defeat of the American Indians. The last publicized "Indian War" in the Blue Mountains was the Boy's War of 1898, which occurred when a group of young white men decided to punish a group of Columbia River Indians for making threats. The ensuing gunfire resulted in the deaths of one boy (George Cutting) and an elderly Indian (Chief Albert).

Reservation Period 1865-1878

The influx of Euro-Americans into southeastern Oregon in the 1860s created the problem of what to do with the displaced American Indian peoples. The safety of the Northern Paiute, many of whom remained neutral throughout the Indian hostilities, was one reason cited by the military, for placing them on reservations.

The Malheur Reservation

The Malheur Reservation was established at Fort Harney in 1872 to contain "all the roving and straggling bands" in southeastern Oregon after the ending of hostilities in 1868. In the end, the area was only occupied between 1871 and 1878 when, through a series of circumstances, groups abandoned the locality to

participate in the Bannock War of 1878 (Brimlow 1938 cf Fowler and Liljeblad 1986). Those who participated in the war and some who did not were held for several years on the Yakima Reservation.

The reservation, when established in 1873, covered 1,778,560 acres and contained excellent grazing lands. During the period of the expansion of the livestock grazing industry ranchers competed for range, and the pressures upon the Indian reservation lands increased. Euro-American stockmen were eager to use the reservation land and illegally trespassed with large numbers of cattle as early as 1877. On May 21, 1883, the President issued an order restoring to the public domain the Malheur reservation, except for 320 acres on which the old military post of Camp Harney stands. The reservation went on the market and was sold to Euro-American livestock ranchers in 1883. The reservation headquarters located on the North Fork of the Malheur River in Agency Valley was withheld from sale until a later time. It was then offered for public sale at the land office in Lakeview.

After the termination of the Malheur Reservation, some Paiute Peoples continued to inhabit their ancestral lands along the Malheur and Silvies Rivers. The Columbia Plateau people from the reservations at Warm Springs and Umatilla continued to use the forested uplands around Castle Rock to hunt and gather.

Transportation 1859-1932

Road building in eastern Oregon began in 1859 when the military surveyed the Dallas Military Wagon Road to provide troops with an additional supply route. Road building ventures were undertaken at a time when the military needed transportation and communication routes. Military funds and manpower were tied up in the Civil War, and the State of Oregon did not have the economic base to support road construction. The solution was to grant private industry certain lands along the roads in lieu of payment for construction. The result was that the roads were constructed on paper as rapidly as possible over the best lands available.

Ontario to Burns Freight Road

The Ontario to Burns Freight Road was constructed in 1884 to move freight and stagelines from Ontario to Burns through Agency Valley. Stage stops were located at Hanna Station, Bendire Creek, and other now unknown locations.

Willamette Valley and Cascade Mountain Wagon Road

In 1864, a road company was formed to raise money to build the Willamette Valley and Cascade Mountain Wagon Road and to apply for a federal land grant. In 1866, Congress donated the land to Oregon, which then turned it over to the Willamette Valley and Cascade Mountain Wagon Road Company. Government Land Office (GLO) maps and surveys show the route of the road as it enters Malheur County at Riverside and winds southward via Crowley and north to Harper and then follows the Malheur River into Vale. The road today is known as the Crowley Road. The route from Albany to the terminus at the Snake River was surveyed in 1871, and calculations showed the route to be 448.7 miles long.

Dallas Military Road

A third road building effort was initiated in 1867 when Congress granted the State of Oregon lands to aid in the construction of a military road from Dallas City to the Snake River opposite Fort Boise. The road extended some 330 miles from The Dalles to Canyon City, then up the John Day River drainages and into the local area west of South Willow Creek and southwest of Ironside Mountain. It crossed South Willow Creek and cut directly across to lower Willow Creek, near the present day town of Brogan. From there it followed Willow Creek down to its confluence with the Malheur River and joined the old Oregon Trail heading southeast to the Snake River crossing and on to Boise. The road was used by emigrants, freighters, and miners.

Railroads

After the Oregon Short Line reached Huntington in 1882, Nyssa in 1883, and Ontario in 1884, fresh garden produce could be shipped to new and larger markets thereby promoting increased crop production and large-scale farming methods. By 1885, Ontario was the largest livestock and wool-shipping center in the Northwest. As the railroad reached farther through the Malheur River canyon in the early 1900s, numerous stations were built along the line and the area's isolation diminished. The railroad led to further road and

railway construction, making possible the exploitation of lumber and hardrock gold resources and providing easier access to markets for local farmers. Continuing livestock industry production and new row crop farming led to the construction of an Ontario to Vale railroad line in 1906, then to Brogan in 1909. The line was extended to Juntura in 1913-1914, west to Harney by 1916, and to Burns by 1924.

Growth and Development 1860-1930

As mining activities for gold in the Eldorado and Malheur City areas slowed, the miners turned to new endeavors. Farmers and livestock ranchers became increasingly interested in the grassy hills surrounding Vale and the many drainages that flowed into the Malheur River. Irrigation canals, including the McLoughin ditch and the Nevada Ditch, were constructed in 1881-82. In 1885, the first general store opened in Vale.

The cattle barons with money and cattle from outside the state flourished in southeastern Oregon. Huge land holdings were acquired through the Oregon Swamp Lands Act and the Desert Land Act, by homesteading, and by the purchase of preemptions and state-owned school lands. Large horse herds were ranged in the Owyhee Breaks by big-scale operators and were thought to out-number cattle in the area by 1881.

By 1884, sheep had become more profitable than cattle and were moved to market in the east along the same routes that brought settlers to the west. The coming of the railroad also brought a new method of moving livestock to the stockyards. Both cattle and sheep ranching prospered during the 1890s. Sheep outfits tended to be small and numerous while cattle operations were larger and fewer. The Taylor Grazing Act of 1934, along with the Great Depression, led to an abrupt and permanent drop in the number of sheep while fostering a long-term increase in the number of beef cattle continuing to the present.

The first automobile appeared in Malheur County in 1905 when one of the drivers in a transcontinental race passed through the area on the Willamette Valley and Cascade Mountain Wagon road. By 1911 automobiles were in use around Baker, Mormon Basin, and elsewhere, and roads were being rapidly developed throughout the county. Construction on US Route 20 occurred from 1917-1939 and on US Route 26 from 1918-1930. Prior to the automobile, the telephone reached the Baker area by 1888. Ontario got its first telephones by 1901, and by 1912 telephone lines reached from Vale through Westfall to Drewsey and elsewhere in the county. In 1928-1928, construction of Owyhee Dam began, and the dam was completed by 1932.

Growth and Development 1931-present

A rapid increase in population occurred in the northern part of Malheur County between 1930 and 1950 as a result of the development of the Vale and Owyhee Irrigation projects. The Vale Irrigation Project (1930) is supplied with water from the Malheur River via Warm Springs and Beulah Reservoirs. The Owyhee project, which was partly constructed with Civilian Conservation Corps labor, supplies water from the Owyhee River impounded by the Owyhee Dam. Irrigation water made possible the development of agricultural lands in the northern part of the county and the introduction of intensive row-crop farming.

The major industries in Malheur County today are agriculture, food processing, and recreation. Agricultural production is divided between grains (barley and wheat), onions, sugar beets, corn, potatoes, and livestock. Crops have led to a growing food products industry dominated by Simplot and Ore-Ida.

Mining companies have successfully explored for gold near Grassy Mountain, south of Highway 20. However, it does not appear to be in commercial quantities at present, and mining development has been put on hold. Other companies have explored the geothermal energy area (KGRA: Known Geothermal Resource Area) south of Vale and have found that the return temperatures of the water are not presently sufficient to warrant production efforts.

Malheur County has a population of about 32,000, according to the 2001 Malheur County Profile (www.malheurco.org). The population is largely concentrated in the irrigated areas in the northeastern part of the county. The population of Ontario, the largest city in Malheur County, is 11,140 residents. Other cities include Nyssa (population 3,170), Vale (1,980), Jordan Valley (240) and Adrian (160). The rest of the

county supports a total population of about 15,320 people. In the year 2000, according to the Economic Profiles for Oregon Counties - Malheur County (www.wilderness.org), the per capita personal income was \$19,035, ranked 31st in the state, with 41% of gross income from livestock and 46% from crops.

4.16 Paleontology

A review of the district files found that no fossil floral or faunal resources had been documented within the GMA. The volcanic nature of the geology surrounding Castle Rock is not conducive to the preservation of fossils. However, fossil localities are present south of Juntura where lakebed sediments are present. One diatomite mine, Eagle-Pitcher, operates an open pit mine near Drewsey on the western slopes of the uplands.

4.17 Recreation and Visual Resources

Within the geographic area, dispersed hunting and associated motorized vehicle-supported camping are the primary recreational activities. The diverse habitat types support wildlife populations that receive some of the greatest hunting pressures within MRA.

Other dispersed recreational activities include driving for leisure, photography, wildlife viewing, hunting of various mammal and bird game species, fishing on the North Fork River Malheur near the Malheur National Forest, and hiking. The Castle Rock geologic feature is an occasional quest of hardier hikers.

Chukar Park Recreation Site, 6 miles north of Juntura on a county road, is the only developed campground and day-use site in the GMA. This fee site has 15 pull-in units with tables, grills, and vault restrooms. For 5 to 6 months it accommodates a campground host who, in part, assists in maintaining the site's irrigated grounds.

A vault toilet remains at the now long-vacated BLM Castle Rock Fire Guard Station site, accessed by a BLM maintained county dirt road just north of the Castle Rock Wilderness Study Area (WSA). Previously protected as a fenced enclosure area, this presently open site remains popular for dispersed camping activities, mostly associated with upland game hunters. The Hunter Spring enclosure has long been used intermittently by dispersed campers, hikers, and hunters. Presently within Castle Rock WSA, this undeveloped site would be developed with camping amenities only should Congress release the site's location from consideration as wilderness. The undeveloped Horseshoe Bend Springs enclosure site on the Malheur River east of Juntura has primitive road access off US Highway 20 for dispersed vehicle-supported campers and day-use visitors to its hot springs.

For each of these sites, the SEORMP ROD provides for the retention of existing, and the development of new support facilities for camping and day-use recreation activities. The plan includes expansion of the Chukar Park site and establishment of the Castle Rock Trail between the proposed Hunter Springs and Castle Rock developed recreation sites (SEORMP ROD Table U-1, "Potential Recreation Sites, Trails, and Improvements of Existing Sites").

Where not limited to driving on existing or designated routes, much of the recreational off-road vehicle driving is incidental to hunting activities in the designated "Open" Off-Highway Vehicle (OHV) use areas of the GMA. Areas of designated motorized vehicle route travel include the Castle Rock and Beaver Dam Creek WSAs, and both the Castle Rock and North Fork Malheur River Areas of Critical Environmental Concern (ACECs). Areas designated as limited to traveling on existing routes with a motorized vehicle are predominately associated with public lands along the US Highway 20 travel corridor.

The public lands associated with the major canyons of the Malheur River, including its North Fork and the upper elevations surrounding the Castle Rock WSA, are within visual resource management (VRM) Class II and Class III areas. The Castle Rock and Beaver Dam Creek WSAs, as well as the North Fork Malheur River ACEC, are managed in accordance to VRM Class I objectives. Castle Rock ACEC is managed in accordance to VRM Class II objectives. The remainder of the GMA is designated VRM Class IV. VRM Class I areas possess the highest and most sensitive esthetic qualities, compared to visual values of public lands designated as VRM Class IV. The management objective of VRM Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes, and it allows limited management activity. The level of change should be very low and must not attract attention. Class I is assigned to those areas where a management decision has been made to preserve a natural landscape. The VRM Class II management objective is to retain the existing character of the

landscape. The level of change to landscape characteristics should be low. Management activities may be noticed but should not attract the attention of a casual observer. Refer to the SEORMP ROD, Map VRM “Visual Resource Management”, and Appendix J “VRM Class Objectives” for explanations of the VRM classes and management objective descriptions for each of the VRM classes. To maintain the management objective of a VRM class, the BLM’s visual contrast rating system is employed as appropriate, for proposed individual projects and activities to analyze and mitigate visual impacts to the existing landscape.

4.18 Special Management Areas

WILDERNESS STUDY AREAS (WSAS)

About 1,100 acres of the 19,580-acre Beaver Dam Creek WSA (OR-3-27) lie in the northeastern portion of the GMA, while its remaining acreage extends east into the Bully Creek GMA (Map 4, “Special Management Areas”). The 6,200 acre Castle Rock WSA (OR-3-18) is in the north central area of the GMA. These WSAs were designated by the BLM in 1980 as a result of a congressionally mandated wilderness review program. Until Congress decides to designate a WSA as a Wilderness Area, or release all or a portion of a WSA from further wilderness consideration, BLM manages WSAs in accordance with the agency’s Interim Management Policy for Land Under Wilderness Review (USDI BLM 1995), to not impair its suitability for preservation as wilderness. If designated a Wilderness Area, the primary and secondary wilderness values of the WSA will be preserved and protected. For the two WSAs these values include naturalness, outstanding opportunities for solitude, primitive and unconfined recreation, juniper steppe woodland areas, a variety of vegetative communities, striking geologic features and landmarks (including Castle Rock), diverse and highly scenic landscape settings, a diverse mix of non-game and game species, and the presence of crucial habitat for sage-grouse, loggerhead shrike, sage sparrow and other special status wildlife species. Within the GMA, portions of three grazing allotments overlap the two WSAs (Map 4, “Special Management Areas”). Under current BLM management direction, livestock grazing would continue in a WSA or Wilderness Area. Existing rangeland improvements within the WSAs include livestock fencing, five developed springs, three earthen reservoirs, two corrals, an old remnant earthen dam, and about 99 miles of fence. Motorized equipment is permitted for maintenance of developed springs and the reservoirs within the WSAs, if determined by BLM to be the minimum tool necessary to accomplish the work. Additional and more specific information regarding the two WSAs can be found in the Oregon Wilderness Final Environmental Impact Statement (USDI BLM 1989), the Oregon Wilderness Study Report (USDI BLM 1991), and the SEORMP ROD (pp. 14-15, and Map WSA-1 “Wilderness Study Areas”).

WILD AND SCENIC STUDY RIVER

In 1988, Congress designated 14.8 miles of the North Fork Malheur River upstream of Beulah Reservoir to the Malheur National Forest boundary as a study river for possible inclusion in the National Wild and Scenic Rivers System (NWSRS). BLM conducted its mandated eligibility and suitability evaluations of the study river. The SEORMP ROD determined that the upper most 3.6 miles of the study river is eligible and administratively suitable with a tentative “Wild” river classification for congressional consideration as a component of the NWSRS. Until Congress takes action on the BLM’s recommendation, BLM is required to manage the administratively suitable river corridor (1/2 mile wide and 1/4 mile either side of the river on federal lands) in a manner to protect the identified river’s outstandingly remarkable values of scenery, recreation, fish, and wildlife. Additional and more specific information regarding the study river is found in the North Fork Malheur Final Eligibility Study Report for the National Wild and Scenic Rivers System (USDI BLM 1993) and the SEORMP ROD (pp.102-104, and Map WSR-1, “Existing and Recommended Wild and Scenic Rivers”).

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECS)

Two ACECs have been designated in the NFMGMA, Castle Rock ACEC (22,799 acres) and North Fork Malheur River ACEC (1,810 acres). The relevant and important values identified for the Castle Rock ACEC include scenic, cultural, historic, and wildlife habitat. The scenic value surrounding Castle Rock is rated as VRM Class II with “A” quality scenery and high sensitivity. Cultural values are associated with both prehistoric and historic use of the area as an important landmark for American Indians, as well as for emigrants who traveled through the area. Wildlife values are associated with the abrupt elevation change that has resulted in a unique area with many habitat types in close proximity to each other. The relevant and important values identified for the North Fork Malheur River ACEC include scenery, two special status fish and their habitat (bull trout and redband trout), and a special status amphibian and its habitat (Columbia spotted frog). A more comprehensive discussion of the ACECs, along with specific management directions that have been identified for both areas, is found in the SEORMP ROD, page 68.

4.19 Energy and Mineral Resources

Energy and mineral resources known or suspected to occur in the NFMGMA consist of zeolite, diatomite, hot-springs-type gold mineralization, and porphyry deposits. The central portion of the GMA has the highest potential for hot-spring-type gold mineralization, while the northern and southern ends of the GMA have low potential. The southwestern part of T. 19 S., R. 37 E. has the highest potential for diatomite occurrence, while the remainder of the GMA has low potential.

There are no active mineral material sites within the GMA.

There is one active mining claim in SW1/4 sec. 18, T. 19 S., R. 38 E., and three active mining claims in NW1/4 sec 19, T. 19 S., R. 38 E. Claim numbers are ORMC141596 through ORMC 141598, and were located in 1992.

4.20 Lands and Realty

In general, all roads across public lands are open to travel by the public unless they are closed specifically for management purposes or during an emergency.

The BLM Vale District currently holds 28 easements on portions of roads located on private lands in Malheur County, half of which are open to public travel. Two other easements for administrative access on portions of roads in Malheur County are held by the BLM Winnemucca District Office. Of these, eight are located within the GMA; five are open to public access, the other three to authorized administrative access only. See Table 11 below for listing of easements within the NFMGMA.

Table 11. BLM Easements on Private Lands in NFMGMA.

BLM Easements on Private Lands in North Fork Malheur River GMA	
Easement Number	Easement Type
OR3-5	Public Use (Exclusive)
OR3-125	Public Use (Exclusive)
OR6-124	Public Use (Exclusive)
OR6-128	Public Use (Exclusive)
RE-B-165	Public Use (Exclusive)
OR3-3C	Administrative Use (Nonexclusive)
OR3-4A	Administrative Use (Nonexclusive)
OR3-4B	Administrative Use (Nonexclusive)

There are no Interstate highways located within the GMA. Approximately 17.5 miles of U.S. Highway 20 form the southern boundary of the GMA, while 22 miles of U.S. Highway 26 form or are contained within its northern boundary. There are 14 roads assigned a name and number by Malheur County, crossing public and private lands in the GMA area (Malheur County Road Index Map, 1973). See Table 12 below for listing of road names and/or numbers.

Table 12. Portions of County Roads Within NFMGMA.

Portions of County Roads Within North Fork Malheur River GMA	
Road Name	Road Number
Farley Road	571
Rose Creek/South Willow Road	503
Bridge Creek Road	528
Little Malheur River Road	530
Lost Creek Road	529
unnamed road	584
Castle Rock Road	no number
Beal Ranch Road	577
Bendire Road	538
Willow Basin Road	no number
Agency Mountain Road	no number
Beulah Road	510
Chimney Creek Road	563
unnamed road	3189

Road Right-of-Way ORE 14295 held by the USFS is located in Section 14, T. 15 S., R. 37 E.

The Access subsection of the Land and Realty section of the SEORMP indicates that road easements are normally acquired to provide administrative access to facilitate management (Chapter 2-92). The provision of public access is listed as another purpose to acquire access easements. The SEORMP FEIS also provides that a transportation management plan will be developed to supply guidance and direction concerning transportation management decisions (Chapter 2. p. 97).

Members of the public and representatives of various government agencies have expressed a need for access to public lands in specific locations in Malheur County. Twenty portions of 15 different roads have been identified for acquisition of easements. These are located within 14 different grazing allotments and are shown on maps in the files of the Vale District BLM office. Map Land-1, “Rights of Way, Avoidance Areas, Critical Access Needs, and Transportation System” of the SEORMP ROD, depicts critical access needs that have been identified to date.

4.21 Human Use and Values

Public land in the landscape area is managed for a wide array of social and economic benefits at the local, regional, and national levels. These benefits include livestock forage, water production/storage/transport, recreation and aesthetic values, and many others. Because wide-ranging values are placed on these resources, the benefits realized from public land management may seem inequitable both socially and economically. It may be assumed that local people in or near the landscape area are more likely to use water from these public lands and hunt, fish or hold a grazing permit than those living outside the area. However, BLM is required to consider the views of all citizens during resource allocations.

This GMA covers Malheur County and portions of Grant and Harney Counties. According to the Malheur County Profile (www.malheurco.org), the total population in Malheur County is approximately 32,000. The population of Juntura is estimated at 50 residents with the surrounding area adding another 30-40 residents, representing 0.3% of the population of Malheur County.

Livestock production is one of the major sources of employment in rural Malheur County. Figures reported by the Oregon Employment Department (2002) based on a cattle and calf inventory of 191,218 animals show that Malheur County ranks first in Oregon for cattle and calves in inventory, as well as the number of and value of cattle and calves sold. On a national level Malheur County ranks 38th in its inventory of cattle and calves, 40th in number of cattle and calves sold, and 53rd in value of cattle and calves sold (personal communication with Jason Yohannan, Regional Economist, Oregon Employment Department).

In the MRA (Northern Malheur County) 232,818 AUMs are allocated to 155 operators. In the NFMGMA, 15 individual operators are permitted to graze livestock. There are 19 grazing allotments that produce forage supporting approximately 21,533 AUMs of active use, and 808 AUMs of suspended use.

The planning area also contains approximately 5,000 acres of forested lands comprised of ponderosa pine, Douglas fir, white fir, western juniper, and quaking aspen. A number of the ponderosa pine stands are old growth timber. There are approximately 1,300 acres of ponderosa pine and Douglas fir with an associated commercial value of approximately \$15,000,000. Past sales have been commercial salvage sales. In the Powder Fire Salvage (1996) 363,000 board feet of primarily ponderosa pine were purchased, and in the Ironside Salvage Sale (1995) 643,000 board feet of mixed species, primarily Douglas fir and white fir, were purchased. Since 1955 the total volume of sales has been approximately 4 million board feet. Intensive commercial harvest would be unlikely in the Castle Rock and North Fork Malheur River ACECs and the administratively suitable North Fork NWSR, because harvest would likely affect the relevant and important or outstandingly remarkable values of those areas (SEORMP ROD 2002).

Water production, storage, and transport are important functions of the geographic management area for ecosystem health and for local water users. Within the management area, public land comprises about 55% % of the land mass (130,533 acres of 237,556 acres) and a corresponding amount of water generated each year. Several hundred acres of irrigated farm and pasture land are located in the management area and are supported by flood irrigation, wells, small reservoirs, and Beulah Reservoir, which holds approximately 60,000 acre-feet.

Recreation opportunities such as hunting, fishing, dispersed camping, hiking, and various other day-use activities, are important locally and regionally. Beulah Reservoir provides additional recreational opportunities for fishing, boating and swimming. These kinds of recreational opportunities are not unique to the management area, although the area provides a relatively uncrowded place to enjoy them. The primary users come from local communities, but regional visitors, especially those from the Boise, Idaho area and the Willamette Valley, are increasing.

4.22 Wilderness Characteristics

Wilderness characteristics outside of existing Wilderness Study Areas were searched for in a process of updating existing inventory information and in the evaluation of a citizen proposal. The updated inventory consisted of identifying the original inventory units described and evaluated between 1978 and 1980, documenting any changes in resource conditions in regards to the four wilderness characteristics since the original inventory, evaluating citizen proposals, and producing summaries of where any or all of the four wilderness characteristics existed or did not exist. This process was conducted by an interdisciplinary team of resource management professionals with the aid of spatial data, existing decision documents, staff experience, and data included with the citizen proposal.

While BLM has no legal, regulatory, or procedural mandate to manage for wilderness characteristics outside of existing WSAs, the authorized officer has the discretion to manage for the maintenance of the characteristics where they are found to exist.

The four wilderness characteristics inventoried include the following:

1. Size - The presence of wilderness characteristics usually depends on large roadless tracts of federal land. To be of sufficient size to have wilderness characteristics, an inventory unit is generally at least 5,000 contiguous roadless acres of public land where the imprint of human activity is substantially unnoticeable. In certain cases, a unit may be less than 5,000 contiguous acres if one of the following factors is present:
 - It is clearly of sufficient size as to make practicable its preservation and use in an unimpaired condition.
 - It is contiguous with a BLM WSA and is not separated from the WSA by a road, right-of-way, or non-federal land.
 - It is contiguous with land managed by another federal agency that has been formally determined to have wilderness or potential wilderness characteristics.
 - It is contiguous with other federal lands administered by an agency with authority to study and preserve wilderness lands, and the combined total is 5,000 acres or more.
 - It is a roadless island (i.e. surrounded by water).
 - It may be determined that only a portion of the inventory unit currently meets the minimum size requirement, in which case the interdisciplinary team should determine whether or not wilderness

characteristics are present only on that portion that is of sufficient size. If the roadless area is not of sufficient size, it cannot be determined to possess wilderness characteristics.

2. Naturalness - This is determined by assessing if the area within the unit boundary appears to have been affected primarily by the forces of nature with the imprint of human activity substantially unnoticeable. Some imprints of human activity may exist in the area if they are substantially unnoticeable. More consideration is given to “apparent naturalness” rather than “natural integrity.” “Apparent naturalness” refers to whether or not an area appears to be in a natural condition to the average visitor who is not familiar with the biological composition of natural ecosystems versus human-affected ecosystems in a given area. Major influences on apparent naturalness are structures, evidence of past significant vegetative disturbance such as logging, and other obvious surface-disturbing activities. “Natural integrity” refers to the presence or absence of ecosystems that are relatively unaffected by human activity, such as the presence of native vegetative communities and absence of invasive species.

3. Outstanding opportunities for solitude and/or primitive and unconfined recreation - “Solitude” is defined as the state of being alone or remote from others, isolation as a lonely or secluded place. “Outstanding” is defined as standing out among others of its kind, conspicuous, prominent, superior to others of its kind, distinguished, and excellent. This considers an individual’s opportunity to avoid the sights, sounds, and evidence of other people in the unit. Factors that affect opportunities for solitude are the size and configuration of the unit; vegetative and topographic screening; and ability of visitors to find a secluded spot, even when others are present in the area. This does not consider the sights and sounds of human activity outside of the unit’s boundaries unless they are so extremely imposing that they cannot be ignored.

Primitive and unconfined recreation includes activities that provide dispersed, undeveloped recreation which do not require facilities or motorized equipment. Some examples include but are not limited to hiking, backpacking, fishing, hunting, caving, horseback riding, rock climbing, river running, cross-country skiing, and bird watching. An area may possess outstanding opportunities for a primitive and unconfined type of recreation either through the diversity in the number of primitive and unconfined recreational activities possible in the unit, or the outstanding quality of one opportunity.

4. Supplemental values - Supplemental values are ecological, geological, or other features of scientific, educational, scenic, or historical value that may be present. If present, a description of these values is included. The description should include a discussion of the relative quantity and quality of these values including features such as anthropological, rare and endangered species, and heritage.

Within NFMGMA, 13 original (1978-1980) inventory units were updated. This update also evaluated the three citizen proposal areas in Beaver Dam Creek Addition, Lake Ridge, and Cottonwood Creek, (see Map 11), which were split due to the presence of vehicular route information and land ownership, resulting in 13 new inventory units. All units evaluated lacked the wilderness characteristics defined above. While some units had individual wilderness characteristics, none possessed the full suite of characteristics sufficient to make practicable their preservation in an unimpaired condition.

As no wilderness characteristics were found within the planning area, no impact will occur as a result of implementing management actions. All three criteria (Size, Natural Condition, and Outstanding opportunities for solitude and/or primitive and unconfined recreation) have to be met in order for an area outside of a designated wilderness or WSA to be found to contain “wilderness character”. Based on the results of the evaluation, wilderness character is lacking in the project area and will not be addressed further in this analysis. Files documenting the interdisciplinary inventory maintenance efforts are on file at the Vale District Office.

5 ENVIRONMENTAL ANALYSIS

Activity plan level objectives appropriate to NFMGMA identify how analysis evaluates alternatives with respect to purpose and need, activity-plan-level objectives, and ROD objectives. This Activity Plan describes objectives for Rangeland Vegetation, Special Status Plant Species, Water Resources and Riparian/Wetlands, Fish and Aquatic Habitat, Wildlife and Wildlife Habitat, Special Status Animal Species, Rangeland/Grazing Use Management, Cultural Resources, and Human Uses and Values. Impacts of each alternative are evaluated by the level to which they will allow for meeting those objectives in summaries following each alternative by resource.

5.1 Rangeland Vegetation

SEORMP ROD Objective 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.

SEORMP ROD Objective 2: Manage big sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife.

NFMGMA Range Vegetation Objective: Maintain ecological function and health of vegetation communities. This would be evidenced by overall trend (photo-plot, line intercept, and professional judgment determinations), for vegetation communities in healthy ecological condition and with a not apparent/static or upward trend designation.

5.1.1 Alternative 1 - Rangeland Vegetation

This alternative would continue authorizing livestock grazing in the same manner and degree as is currently authorized, even though some upland and riparian areas in the NFMGMA are not meeting standards for rangeland health.

GENERAL IMPACTS

Pastures with non-native perennial species, e.g. crested wheatgrass seedings, would continue to be managed primarily for forage production and other resource objectives as outlined in the SEORMP, and would continue to decline where spring grazing and high utilizations limit reproductive and vigor capabilities of the seeded species. No vegetation treatments would be implemented, and no improvement in species diversity would be realized.

AUM allocation would not change, and grazing utilization levels and distribution of use would likely remain constant, although downward trends within riparian areas and on uplands may be reversed with lower utilization levels in pastures grazed either yearly or every other year at critical spring periods. Where trends are not specifically identified in the discussion below, the reader is referred to the determinations for specific trends by pasture.

There would be no new water developments proposed under this alternative, only renovation or reconstruction of existing spring projects on a case by case basis. New projects may be proposed by livestock operators.

Western juniper treatments for reduction of encroaching western juniper would not be emphasized under this alternative, which may result in many acres of sagebrush/grassland continuing to be converted to western juniper woodlands, as seedlings become established and young trees reach maturity. Numerous spring sources and riparian areas would be affected also by the substantial water needs of an increasing number of mature western juniper. Riparian vegetation would be diminished as water would no longer be available to support herbaceous plant growth.

ALLOTMENT-BY-ALLOTMENT IMPACTS

IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

DeArmond-Murphy Allotment

Grazing in this allotment in 16 pastures would be authorized in the same manner and degree as they have been currently. Under current management, AUMs used have been below authorized (permitted) use by an average of approximately 1700 AUMs over the last 26 years. It is anticipated that the current permittees would continue

grazing at this approximate level of AUMs. Should a new owner(s) manage this ranch operation and allotment, a new evaluation and grazing system would need to be prepared if the new permittee(s) intended to utilize full AUMs.

Upland trends have been recorded as static (no apparent change) to upward in the six pastures with upland trend plots in this allotment. Static to upward trends on the uplands would be anticipated to continue with the current grazing system in all pastures.

Riparian vegetation in Jerry Canyon, which is part of the Castle Rock pasture, would remain static or decline in condition due to summer and late season grazing which occurs yearly. Riparian resources in three other pastures (Hunter Mountain, Hunter Creek, and Morton) which were not meeting standards and guidelines for riparian resources due to current livestock grazing would remain in unsatisfactory condition.

Whitley Canyon Allotment

Grazing in the six pastures of this allotment would continue as it has been historically with the exception of the two pastures along the North Fork, Malheur River. Changes have been made to the grazing in these riparian pastures in the last five years (2000 – 2005) due to concerns with riparian health and associated special status species management, primarily bull trout. Improvement in riparian resources in these pastures has been realized in this interim and would continue as the grazing is maintained with either light spring use or rest.

Pete's Mountain Pasture would continue to be grazed on a spring grazing schedule with rest alternated with spring use in the pasture. This kind of flip/flop system (one year use in spring; one year rest) will often result in degraded resource conditions, because one year of rest is not sufficient for the native bunchgrasses to recover from the effects of growing season herbage removal, particularly if utilization levels are in the moderate to heavy ranges. Utilization levels in Pete's Mountain have been too high with this season of use to maintain or improve rangeland conditions, and the upland vegetation cannot maintain proper vigor or show improvement with grazing under the current grazing regime. Continuing downward trends would be expected if the system remains in place. However, given the early use only shown on the actual use history for the pasture, it is unknown why the riparian vegetation is not in better condition. The actual use data are suspect for this pasture, and erroneous data may in part account for the declines in upland trends, as well as poor riparian conditions.

Without project development in this allotment, vegetation at spring sites would continue to receive impacts from grazing animals and would not realize their full potential.

Grazing use for both timing and utilization levels in the West Juniper, Burnt Mountain, and Little Malheur Pastures has maintained good resource conditions with all three pastures, which are showing static to upward trends for upland vegetation. These trends and conditions would be expected to continue with the current grazing system.

Lack of western juniper control in the areas identified for control in this allotment would continue to have negative long term effects on overall rangeland health as many western juniper seedlings are produced and young plants reach maturity.

Allotment #6

Prior to 2000 and assessment of upland standards and guidelines in this allotment, livestock grazing occurred frequently from mid summer to late fall. This kind of grazing resulted in the allotment not meeting SRH for riparian standards because livestock concentrate for extended periods of time at the drainage bottoms and at the watering sites during the warm summer months, causing significant adverse impacts to riparian resources, including vegetation and water quality. Upland vegetation has maintained its health and vigor, with standards met for the uplands.

Since 2000, the grazing season has changed in this allotment, and either early season grazing (mid-March to late May) or late fall grazing (mid-October to late November) has occurred along with two years of rest. Problems associated with riparian grazing have consequently been addressed with the new grazing system. Livestock impacts have been greatly reduced in the cool weather seasons at riparian sites as livestock move out of the bottoms and do not concentrate at the watering sites.

Should grazing revert to the schedules prior to 2000, adverse impacts to riparian resources would again occur. However, the current grazing season would maintain and improve riparian conditions within the pasture. Livestock would utilize the pasture when native perennial grasslands are dormant.

Calf Creek Allotment

Grazing in this allotment in the seven pastures managed by the BLM would be authorized in the same manner and degree as they have been historically. Prior to 2000 and assessments of upland standards and guidelines in this allotment, livestock grazing occurred in a series of pastures used early and into the critical growing season (Stemler Basin, Cave Creek, Lower Calf Creek, Upper Calf Creek, and Chalk Camp pastures), with two pastures (Dishrag and Lake Ridge) generally used later in the season. Lake Ridge Pasture often had been used during a portion of the critical growing season (May and June). This kind of grazing resulted in poor upland conditions in the pastures grazed early and into the growing season and in poor riparian conditions in pastures grazed later in the hot season. This grazing prior to 2000 was determined to have contributed to not meeting one or more of the five standards in all of the pastures assessed in this allotment. No improvements to either upland or riparian conditions would be expected with continuation of the pre-2000 grazing scheme.

Castle Rock Allotment

Based on assessments for rangeland standards and guidelines in the Castle Rock Allotment, current livestock grazing, i.e. grazing prior to 2000, was determined to have contributed to not meeting one or more of the five standards in nine of the twelve pastures assessed.

All standards were met in North and South Rockpile Pastures, and trend in North Rockpile was satisfactory. Continuation of the current grazing scheme for these pastures would maintain adequate resource conditions. Although East Rockpile Pasture did not meet four standards, current livestock grazing was not the contributing factor, and conditions would be maintained with current livestock grazing use.

Should current livestock grazing continue on the remaining nine pastures, no improvement of resource conditions as assessed through the standards and guidelines process and/or reversal of downward trends would be realized. Upland trends in Castle Rock Pasture would continue to decline with early spring use which extends into the hot seasons of July every year, and riparian resources would continue to experience adverse impacts. Upland standards and static upland trends would be maintained with current livestock grazing in Poison, Heifer, Hat Butte, Clevenger Butte #1 and Clevenger Butte #2 Pastures, but riparian declines would continue with yearly livestock use in the hot season period. Although Standard 1 was met in Duck Pond Pasture, Standards 2 – 5 were not met and would not be expected to improve with use each year in late spring through part of summer. Downward trends in a portion of House Pasture and upland standards would not be expected to improve with current grazing, which has occurred yearly in spring and often into mid or late summer. No standard was met in Sheep Rock Pasture with current grazing; upland use is often too early and too severe, and later use impacts riparian conditions. Upland trends would continue to be downward if the current grazing system is maintained, and riparian areas could not be expected to make progress toward meeting standards.

Beulah Allotment

This allotment has been divided into two areas of use, with operator # 3603431 running livestock on the Poverty Flat portion and operator # 3603154 on the Scab portion. Hence, two different grazing systems have been developed to accommodate the two herds. In the Poverty Flat area of use, early spring grazing use every other year in three pastures (Lower Poverty, Upper Poverty, and Jack Creek) has resulted in not meeting SRH and with downward upland trends in two of the three pastures. Little Seeding has been grazed during the critical growing season (May through part of June) yearly, and actual use of West MJ field has shown use in the critical growing season through October yearly for a number of years. Upland trends were down in Little Seeding, and the pasture was not meeting SRH. West MJ field has no trend plots and was not assessed for SRH. Three other fields in this area of use include North Homestead, Bennett and Mud Springs, for which no trend or grazing history are available. Assessment of SRH in these fields showed that none were meeting all standards for SRH. Should current grazing continue in the same patterns with the same numbers and kind of livestock, no improvement in range conditions toward meeting SRH would be expected to occur?

In the Scab area of use of this allotment, Moonshine, Big Seeding, and Scab pastures all showed downward trends on the uplands and were not meeting SRH. Only Antelope Pasture showed upward upland trend, due to the yearly

late season use by livestock; this pasture was not meeting Standard 5 only, due to heavy browsing on the extensive stands of bitterbrush, which has been attributed to current livestock grazing. Burnt Field has no upland trend plot, but this pasture was not meeting SRH. Moonshine, Big Seeding, Scab, and Burnt Field all are grazed early and/or during the critical growing season usually every year or sometimes with a year of rest. However, even with the rest, use in all these pastures has resulted in declining or otherwise unsatisfactory conditions, which would be expected to continue if grazing adjustments would not be made.

Agency Mountain

Assessments for SRH identified two pastures, Agency Mountain and Reservoir Field, as not meeting riparian Standards 2 and 4 due to current livestock grazing and not meeting Standard 5 for terrestrial species in Agency Mountain Pasture due to current livestock grazing. Upland trend was static in both Agency Mountain and Watergulch Pastures. With continuation of current late season grazing in the Watergulch Pasture, the upland vegetative resources would be expected to be maintained because upland species would have completed their annual growth prior to being grazed. The yearly early season grazing which extends into the critical growing season every year would negatively impact terrestrial species in Agency Mountain Pasture, because native grasses and shrubs would not experience regrowth each year and consequently would not replenish carbohydrate reserves. Grasses would be expected to lose vigor and size. Riparian conditions in this pasture cannot be explained based on actual use submitted; the early season use as reported should have resulted in excellent riparian conditions. The current grazing schedule if carefully followed would promote improvement of the riparian resources with no occurrence of hot season and late season grazing.

CUSTODIAL (C) ALLOTMENTS

In four allotments where specific SRH were not met due to current livestock grazing and where projects have not been constructed to correct livestock impacts to riparian resources (Butte Tree, Chukar Park – North Pasture, Lockart Mountain, and Malheur River), satisfactory upland conditions for vegetation would remain, but riparian vegetation would continue to be adversely impacted by livestock grazing, and attainment of SRH would not be realized. Lack of treatment of western juniper would result in continuing decline of shrub grasslands and riparian systems, as western juniper would continue to invade these areas.

SUMMARY

Vegetation objectives would not be met under this alternative and are inconsistent with the SRH.

5.1.2 Alternative II - Rangeland Vegetation

This alternative proposes to modify existing grazing systems where they failed to meet SRH. The grazing systems have been designed to meet the needs of both uplands and riparian areas through careful livestock moves, while limiting utilization levels to criteria established in the SEORMP.

GENERAL IMPACTS

Because of the changes in seasons of use, incorporation of rest periods in some pastures, and proposed careful management of maximum utilization levels, the grazing systems outlined in this alternative are expected to promote progress toward meeting SRH where they were not met due to livestock grazing at the time of the assessments (“current livestock grazing”) and to maintain standards where they were met.

RANGELAND DEVELOPMENT PROJECT IMPACTS

Adherence to the assumptions detailed in sections 3.1 and 3.3 of this document would be expected to effectively mitigate most adverse impacts associated with rangeland project development.

Proposed livestock water pipeline installation in Pete’s Mountain and Juniper Gulch Pastures would be expected to increase the extent and likelihood of adverse grazing use impacts on rangeland vegetation in localized areas, due to re-distribution of grazing impacts in the area surrounding the newly developed water sources. Overall grazing use within the pastures would impact rangeland vegetation less by decreasing the incidence of repeat grazing of individual plants, and reduce utilization across the pastures by spreading the use over a greater area. Pipeline construction activities would be expected to remove existing vegetation and allow for invasive exotic species to establish if seeding of the pipeline furrow was unsuccessful.

The proposed rangeland restoration treatment, consisting of 1,200 acres, would be intended primarily to achieve DRFC's rather than increase forage production. The restoration treatments would reseed native and/or non-native herbaceous species that would improve existing diversity and decrease the influence of annual exotic species on the sites. The treatment area consists of annual-dominated communities in Pete's Mountain and Beulah Seeding Pastures. Treatment methods may include prescribed fire, mechanical (brush beating), or chemical methods.

Mechanical removal of western juniper around aspen stands, in mountain shrub communities, and at springs would be expected to improve upland vegetation vigor and health within the treated area by limiting competition for water, nutrients, and sunlight, and where juniper density is high, would allow for exclusion of these areas for approximately 3 years from livestock grazing. A discussion of fire impacts on vegetation/habitat as a result of the implementation of western juniper removal is found in section 5.9.2, Wildlife and Wildlife Habitats; Special Status Animal Species.

Sagebrush mowing on approximately 120 acres within existing seedings would temporarily impact shrubs in the treatment area, depending upon growth form of individual shrubs. Umbrella-formed sagebrush, rabbitbrush, and bitterbrush would likely be killed by the mowing, while shrubs with lateral branches would allow for regeneration of existing plants. Setting the mower deck at a height of 8 to 12 inches above the ground would be expected to allow for the maintenance of many shrubs on site, while temporarily diminishing the competition with existing herbaceous species in the understory. Grasses and forbs would improve in health, vigor, and cover in the areas mowed due to decreased competition for nutrients, water, and sunlight. Other mowing projects in Vale District have allowed for increased livestock and wildlife forage, maintenance of a shrub component on site, while allowing for expression of seeded non-native or existing native herbaceous species.

Redevelopment of existing spring projects would be expected to temporarily impact upland vegetation along the pipeline furrow due to the removal of vegetation as the pipe is buried. Successful re-seeding of the furrow would limit the occurrence of invasive exotic species occupation of the disturbance created as a result of project construction activities. In the long-term, impacts to upland vegetation would be beneficial through the creation of exclusion areas surrounding the spring source, allowing for comparison of grazed and ungrazed areas.

New fence construction will allow for improved grazing management, benefiting rangeland vegetation by re-distributing livestock within the pasture. Upland vegetation will be impacted along the new fences similar to existing fencing through livestock creation of trails, where the vegetation will be lost or grazed more intensely than prior to construction. The disturbance is typically limited to a narrow band adjacent to the trail, and with the enhanced ability to manage grazing duration and intensity, would provide overall benefits to upland vegetation at the pasture scale.

ALLOTMENT-BY-ALLOTMENT IMPACTS

IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

DeArmond-Murphy Allotment

Grazing in Beulah Seeding, which did not meet rangeland standards and guidelines due to current livestock grazing for ecological processes or a diversity of species, would include a rest year alternated with a year of early season grazing within prescribed utilization levels for a new pasture (Upper Beulah Seeding). Dividing the original pasture into two pastures would add to flexibility of early spring grazing. Full regrowth should occur most years on Lower Beulah Seeding, which would be grazed yearly. This system should permit increased vigor of the crested wheatgrass and the opportunity for forb species to produce seed in the rest year and during times of regrowth.

The remaining pastures in the allotment would all be grazed on an every-other-year schedule except Castle Rock Pasture, which would be grazed from mid-summer to fall yearly. Jerry Canyon would be grazed in June and July every other year, which should maintain upland vegetative resources by avoiding most of the critical season grazing period and should permit recovery of riparian resources, because no grazing is scheduled for August and into fall. Castle Rock Pasture has been meeting standards and guidelines with late season use yearly. In effect, half the allotment (except the two pastures described above and the seeding pasture) would receive a rest every year. However, grazing in these pastures would occur during the critical growing season, and careful management of utilization levels would be essential to maintaining the vigor and reproductive capabilities of the upland vegetation. Native bunchgrasses cannot be grazed, even every other year, to heavy levels and maintain their vigor with one year's rest only; utilizations must be light with this kind of grazing scheme. This schedule generally follows the

current grazing regime in the allotment, which has resulted in over-all healthy rangelands as assessed by the standards and guidelines process. It is anticipated that both upland and riparian resources will thrive with the proposed grazing schedule.

Whitley Canyon

Three pastures did not meet rangeland standards and guidelines due to current livestock grazing. Grazing management has changed for the River and Dogwood Pastures since the assessments were made, and riparian resources have improved. The grazing schedule as proposed and as currently implemented for these two pastures, with either rest or light early season grazing, would continue to facilitate improvement of riparian resources in the pastures and maintain upland conditions.

The proposed grazing system in Pete's Mountain Pasture is designed to improve both riparian and upland resources, including physical and biotic factors. A three-year rotation grazing system would be implemented, which includes one year's grazing in this pasture for three months in the spring. This kind of early season grazing has the potential to cause significant adverse impacts to vigor and health of native bunchgrasses, and meeting established maximum allowable utilization levels would be critical to maintaining the health of vegetative resources for that year. However, one year of the grazing sequence is complete rest, followed by a year of one month's fall grazing only. It is anticipated that this grazing scheme would result in improvement to the vegetative resource in Pete's Mountain Pasture. All other pastures within the allotment should maintain a healthy vegetative component with the overall grazing system proposed.

Allotment #6

The proposed grazing schedule in this single pasture allotment (a small stream enclosure is not grazed) would have livestock in the allotment from October through March 1. All negative impacts associated with riparian management would be alleviated because livestock would not be inclined to concentrate on riparian areas in the cool/cold seasons; in fact, with riparian areas predominantly in the cold air drainage pockets, the cattle would be more inclined to spend their days on the warm, south-facing hillsides. Upland vegetation would also benefit because grazing would occur during the dormant season for native grasses, and complete growing season rest would be realized. On rare occasions when winters are mild, native bunchgrasses and exotic annuals on south-facing slopes may experience early growth, and livestock would be expected to make use of the new, green grass. However, if livestock are removed by March 1, full regrowth of grass tissue should occur on the bunchgrasses.

Antelope bitterbrush, an extensive shrub component in this pasture, may experience fairly heavy use; however, utilizations would be limited to 40% of current year's leader growth as measured by the Cole Browse method, and livestock removed when that utilization level is reached. Sufficient shrub material would remain, and the bitterbrush would not experience negative impacts to its health and vigor.

Renovation of two springs, along with construction of a new well and pipeline, would result in better riparian grazing management.

Treatment of encroaching western juniper through cutting, slash pile burning, and/or broadcast burning would permit release of shrubs, native bunchgrass, and forbs where their growth has been limited by the increasing numbers of western juniper. Broadcast burning may result in increased areas of concentration of cheatgrass and Medusahead wildrye in localities where these species occur in greater than trace amounts by cover.

Castle Rock Allotment

The grazing schedule proposed for this allotment for the next four years incorporates a three year grazing sequence which includes one year of critical season grazing, one year of non-critical season grazing, and one year of rest for most pastures. No grazing use would be made during the months of July, August and September in the allotment, except for two month's use in July and August in Clevenger Butte #2 Pasture in the second year of the four year cycle. In Sheep Rock Pasture, critical growing season use would be followed by two years' rest. The three Rockpile pastures would receive alternate year's spring use as described below. This over-all grazing scheme is anticipated to result in significant vegetative improvement in all pastures where standards and guidelines were not met due to current livestock grazing.

Grazing would be the same as currently is occurring in North Rockpile, South Rockpile, and East Rockpile. Along with light utilizations, this system has maintained satisfactory rangeland conditions. Continuing careful management of utilization levels with this grazing strategy is expected to continue to maintain conditions and trends in the three Rockpile pastures.

Both riparian and upland resources in Sheep Rock Pasture should improve with two years' rest following a spring use period, provided spring use utilizations are carefully monitored and kept within the target levels. All riparian resources, including aspen groves, should begin recovery of vegetation from currently degraded conditions. Riparian vegetation should respond with increased vigor of all species, vegetative reproduction of aspen and rhizomatous grass/grasslike species, and potentially seed production and seedling establishment. The two months of summer use in four years' time in Clevenger Butte Pasture should have a positive impact on upland vegetation, particularly grasses and forbs, which would be near or at dormancy by this time.

At the end of the four year cycle, another grazing system may be developed through the adaptive management process. It would be analyzed for its impacts on the resources that are anticipated to improve with the considerable rest proposed above. The grazing cycle to be developed following these four years cannot be completely developed at present, because the resource responses are difficult to predict with certainty and continued protection may be necessary to meet resource objectives.

Calf Creek Allotment

In order to correct the problem of not meeting SRH in any pasture in this allotment, a four year cycle has been developed which would carefully manage livestock grazing. One band of 500 head of sheep would graze from March 15 to June 1 each year at intervals of one to six weeks per pasture. Because sheep utilize forbs to a greater extent than cattle and because they can be more easily herded from location to location, the shift to some sheep use may provide benefits to upland vegetation, because areas inaccessible to cattle would be grazed by the sheep. Grasses and forbs would be selected from different locations and at different seasons, permitting either regrowth or several years of rest in these more remote areas and resulting in maintenance or improvement of vigor on the vegetative resource. Careful herding would be key to keeping sheep in the more remote and unused areas.

Cattle would graze the allotment from April 1 to December 1 with varying numbers of head throughout the grazing season (Table 24, Alternative Analysis for Rangeland Grazing Use). In all years of the four year cycle, cattle would be absent from the allotment during the month of September. Although grazing would occur during the critical growing season in Stemler Basin three years out of four, cattle use would occur only one year out of four during this season. Sheep use would be made in areas mostly inaccessible to cattle during the lightly stocked spring use periods, which should result in regrowth of grazed grasses and negligible impacts, particularly in Years 1 and 3. Utilization of native grasses in Year 2 would need to be carefully monitored because the season of use is for two months which extend into the critical growing season. This pasture will require concentrated monitoring to assure that trends can be reversed.

Dishrag Pasture would be grazed two years out of four during the critical growing season by livestock (Years 2 and 4) and several weeks by sheep during the critical growing season in Years 1 and 2. Because this is one of the best condition pastures in the allotment, the grazing schedule proposed should permit recovery of SRH and maintain the static upland trends. Careful herding of sheep would be critical to grazing in areas not generally used by livestock. Lake Ridge Pasture would be grazed during the critical growing season one year out of four by cattle (Year 4), which would allow recovery of upland conditions, although use on Year 3 to May 20 may impact recovery if drought conditions do not allow for regrowth. Use by sheep during the early part of the critical growing period in Years 1 and 2 would only have an impact on vigor of grasses if sufficient moisture is not received to permit regrowth in the later part of May.

Cave Creek, Lower Calf Creek, Upper Calf Creek, and Chalk Camp Pastures would be managed primarily for riparian concerns; however, each of these pastures has periods of livestock use scheduled during the critical growing season for upland grasses during the four year cycle by either cattle or sheep. Lower Calf Creek is rested from all use for two years, which should permit recovery of both riparian and upland vegetation. Sheep use in Upper Calf Creek occurs for one week in four, and in Chalk Camp for four weeks in Years 2 and 3. All of these pastures should maintain or improve vigor of the native bunchgrasses with the proposed grazing, because timing is rotated yearly

and the period of use is short. The late season use in Chalk Camp in three of four years with cattle may result in extensive browsing on twigs of shrub species in the riparian areas unless herding keeps livestock on the uplands.

Agency Mountain Allotment

Agency Mountain Pasture failed to meet SRH in this allotment. It would be split into two pastures, and the proposed grazing system would consist of a six year cycle with the two new pastures (Agency Mountain and North Agency Mountain) grazed two out of six years in spring at the critical growing time for upland vegetation. Although April use is proposed for two out of six years also for these pastures, regrowth should occur in most years. Late summer or fall use would occur two years out of six years in both pastures. The system should provide sufficient growing season deferment and appropriate riparian management, which is anticipated to result in improvement of rangeland health on both upland and riparian areas. Water Gulch Pasture would be grazed in spring and summer two out of the six years; a light stocking rate during this time would contribute to maintaining plant health in the pasture. A small pasture may also be created in Water Gulch Pasture which would be used in the fall to alleviate livestock congregating along the southern-most fence.

The two new pastures, North Agency Mountain and Agency Pastures created from Agency Mountain Pasture, would be expected to maintain upland range conditions and improve upland vegetative vigor. Improvement in riparian function could be expected also in these pastures. The satisfactory conditions in Water Gulch Pasture would be maintained with critical growing season use occurring only every third year (two out of six years).

Beulah Allotment

Beulah Allotment would continue to be divided into two areas of use in the proposed grazing schedules which have been designed to correct the situation of no pastures meeting SRH due to current livestock grazing. In the Poverty Flat area of use grazed by operator # 3603431's livestock, grazing by cattle and sheep (sheep use is limited to 100 AUMs each year of the grazing system) would begin on March 15 or March 20 and run through varying dates in late June, with no use in the area from the June period through September or October, at which time cattle would graze the area from varying dates in September through varying dates in October or November. In the Scab area of use grazed by operator # 3603154's livestock, cattle would begin grazing on March 15 or March 20 and run through October 05 in Year 1, October 03 in Year 2, and October 15 through December 15 in Year 3 (livestock would be off federal range in this year from September 01 through October 14).

The four-year schedule developed for the Poverty Flat area of use would give deferred grazing use in the cycle to Lower Poverty, Upper Poverty, Mud Springs, Burnt, Bennett, Jack Creek, and West MJ Pastures. Grazing during the critical growing season would be rotated between all pastures. With rotation of critical growing season use, these pastures would recover from the failure to meet SRH and would make progress toward meeting SRH. Concentration of much of the AUMS in the early part of the season would interfere with achievement of meeting SRH, and utilization limits must be carefully monitored; drought years would result in little regrowth on vegetation in pastures grazed near the critical growing season. West MJ Pasture would be grazed two out of four years during the critical growing season with both cattle and sheep, making maintenance of low utilization levels of the utmost importance for making progress toward meetings SRH. With creation of two pastures from North Homestead (North East Homestead and North West Homestead), livestock grazing during the critical growing season would occur one out of four years in the east pasture and two out of four in the west pasture. Maintaining slight to light utilization levels would be critical to improvement and progress toward SRH in these pastures. Mud Springs would be grazed during the critical growing season three years out of four, with scheduled use light in Years 1 and 3 and fall use only in Year 4. Maintenance of slight to light utilization levels would be critical to improving resources in this pasture. In addition, use of sheep in four pastures in this allotment and their ability to be herded into areas generally unused by cattle would result in use patterns that would benefit the rangeland vegetation resources in these pastures.

The three-year schedule developed for the Scab area of use proposes that 40 yearlings and 77 cows graze Moonshine Pasture every other year from March 20 to May 1, with 50 AUMs of sheep use in place of corresponding AUMs of livestock use on Years 2 and 4. This is basically the grazing schedule with respect to timing that has been in effect in this pasture as recorded on submitted actual use, with resulting decline in upland trend and not meeting SRH. However, the conditions found during S&G assessments and the declining trend recorded for this pasture cannot be explained based on the actual use submitted; if grazing at this time period only has occurred, the area should reflect better conditions. Either trespass livestock have been making unrecorded use of the pasture or the reported actual use dates have been incorrect. The proposed grazing schedule would result in regrowth of upland grasses if

livestock are removed completely by May 1 and soil moisture remains sufficient for regrowth. With the increased number of AUMs scheduled to be removed from this pasture, careful attention would need to be paid to utilization levels, and livestock removed upon reaching target levels.

In the remainder of the Scab area of use, a four-pasture, three-year rotation schedule with either extremely light growing season use or deferred growing season use on a rotational basis should result in progress toward attainment of SRH in all pastures. In the proposed system, livestock are removed from federal range for 18 days in June in Year 1, ten days in May in Year 2, and 45 days in September and October in Year 3.

CUSTODIAL (C) ALLOTMENTS

With either the implementation of new grazing schedules proposed for Lockart Mountain, Butte Tree, and Chukar Park Allotments or projects to be constructed in Malheur River Allotment, recovery of woody and herbaceous riparian vegetation and attainment of riparian-related SRH would be expected. Treatment of western juniper would benefit both upland plant communities and riparian systems as competitive interactions with western juniper would be reduced.

SUMMARY

Vegetation objectives would be met under Alternative II with the proposed grazing systems, various classes of livestock, and maximum allowable utilization levels. Objectives would be met with proposed vegetation manipulation projects, including western juniper control and brush-beating in two crested wheatgrass seedlings.

5.1.3 Alternative III - Rangeland Vegetation

This alternative proposes to provide 3 years of rest from livestock grazing in pastures that were not meeting S&Gs due to current livestock grazing, as assessed in 2000 and 2001. In some situations, as indicated below, substantial and beneficial changes have been made to grazing schedules in the intervening years so that the three-year rest would no longer be necessary to help in recovery of resources impacted by grazing. No AUMs would be utilized in the allotments with pastures to be rested. The rested AUMs would be put into suspension for a three-year period. The grazing schedules developed for Alternative II would be implemented for all grazed pastures.

GENERAL IMPACTS

Projects would be constructed as outlined in Alternative II, and impacts would be as analyzed in that section. Treatments of western juniper would be greatly reduced under this alternative resulting in a proliferation of trees of all ages, and substantial competition for water and nutrients with upland and riparian vegetation in areas of high concentrations of western juniper.

The 3-year proposed rest from livestock grazing assumes normal growing conditions, particularly with regard to average rainfall. Should drought conditions occur during 1 or more years, expected improvements to vigor of the native plant species and potential establishment of new plants may not be realized. In addition, unexpected and excessive numbers of wildlife species, particularly deer and elk, may interfere with recovery of riparian areas. Higher than expected rainfall may result in especially vigorous plant growth and an increase in litter. Overall, however, 3 years of rest from livestock grazing would be expected to result in improved vegetative conditions as the herbaceous component of the plant communities would increase in vigor, size, and volume of production. As plants would experience complete opportunity for seed production, seedlings may become established. Litter from the full growth potential of the herbaceous component would be available for incorporation into the soil. All areas receiving such rest would receive a three-year 'jump start' before beginning the new and improved grazing schedules.

RANGELAND DEVELOPMENT PROJECT IMPACTS

Proposed livestock water pipeline installation in Pete's Mountain and Juniper Gulch Pastures would be expected to impact rangeland vegetation the same as described in Alternative II.

The proposed rangeland restoration treatment would be expected to impact rangeland vegetation the same as described in Alternative II.

Mechanical removal of western juniper in aspen stands, in mountain shrub communities, and at springs would be expected to improve upland vegetation vigor and health within the treated area by limiting competition for water,

nutrients, and sunlight, and where juniper density is high, would allow for exclusion of these areas for approximately 3 years from livestock grazing. The limited acreage available for treatment in this alternative would allow for continued negative impacts to rangeland vegetation as woodland development progresses with a corresponding decrease in desirable native shrub and herbaceous species occupying the area. A discussion of fire impacts on vegetation/habitat as a result of the implementation of western juniper removal is found in section 5.9.2, Wildlife and Wildlife Habitats; Special Status Animal Species.

Sagebrush mowing would be expected to impact rangeland vegetation the same as described in Alternative II.

Redevelopment of existing spring projects would be expected to impact rangeland vegetation the same as described in Alternative II.

New fence construction would be expected to impact rangeland vegetation the same as described in Alternative II.

ALLOTMENT-BY-ALLOTMENT IMPACTS IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

DeArmond-Murphy Allotment

Five pastures (Jerry Canyon, Beulah Seeding, Hunter Mountain, Hunter Creek, and Morton) would receive 3 years rest, to be followed by the grazing system outlined and analyzed in Alternative II. Upland vegetation in Beulah Seeding would be expected to increase in vigor and may result in seed set and seedling establishment of crested wheatgrass and desirable forbs with the years of rest. Residual litter would also contribute to protection of soil surface. The riparian resources in the five other pastures would improve with 3 years rest followed by the proposed grazing schedule. Woody and streamside vegetation would experience full growth for 3 years, permitting an increase in vigor, a build-up of litter, a corresponding increase in bank stability, and the opportunity for some shrubs to grow beyond the reach of grazing animals.

Whitley Canyon Allotment

Although three pastures have been identified as not meeting S&Gs due to current livestock grazing, two pastures along the North Fork, Malheur River have either been rested or slightly grazed since the assessments were made and would no longer benefit substantially from an additional 3 years rest. Pete's Mountain Pasture would receive 3 years rest to increase vigor and numbers of the upland native bunchgrasses. It is anticipated that the grasses would produce seed during this period of no grazing providing new plants, thus promoting soil stabilization and preventing further invasion of exotic annual species. The grazing system as outlined in Alternative II would be implemented following the 3-year period in Pete's Mountain Pasture, and impacts would be as analyzed in that alternative.

Allotment #6

Impacts would be as analyzed in Alternative II. Grazing in this allotment has changed since S&Gs were assessed in 2000, and an improved grazing system has resulted in improvements to riparian and upland vegetation. Consequently, there is no resource need for the grazed pasture to be rested for 3 years.

Calf Creek Allotment

All seven pastures in this allotment failed to meet standards due to current livestock grazing (as of 2000, the year in which assessments were completed) for rangeland standards and guidelines. Consequently, the entire allotment would receive 3 years rest to increase vigor and numbers of native bunchgrass species in uplands and to improve both woody and herbaceous species in the riparian zones. The grazing system as outlined in Alternative II would be implemented following the 3-year period, and impacts would be as analyzed in that alternative.

Beulah Allotment

All pastures in the two grazing systems within this allotment failed to meet standards due to current livestock grazing (as of 2000, the year in which assessments were completed) for rangeland standards and guidelines. Consequently, the entire allotment would receive 3 years rest to increase vigor and numbers of native bunchgrass species in uplands and to improve both woody and herbaceous species in the riparian zones. The grazing system as outlined in Alternative II would be implemented following the 3-year period, and impacts would be as analyzed in that alternative.

Agency Mountain Allotment

One pasture, Agency Mountain, would be rested for 3 years because of failure to meet standards due to current livestock grazing. The grazing system as outlined in Alternative II would be implemented following the 3-year period, and impacts would be as analyzed in that alternative. The 3 years rest would be anticipated to improve the vigor and numbers of native bunchgrasses, to improve vigor of key browse shrub species, and to allow riparian areas to make full growth of herbaceous and woody species, resulting in improved riparian conditions.

Castle Rock Allotment

Nine out of 12 pastures assessed in this allotment failed to meet standards due to current livestock grazing (as of 2000, the year in which assessments were completed) for rangeland standards and guidelines. Consequently, those nine pastures – Castle Rock, Clevenger Butte #1, Clevenger Butte #2, Duck Pond, House, Poison, Heifer, Hat Butte, and Sheep Rock – would receive 3 years rest from grazing use. During this rest period, it is expected that upland vegetation would increase in vigor and potentially in numbers of upland bunchgrasses. Riparian zones would experience improvement to both woody and herbaceous species with no livestock impacts. The grazing system as outlined in Alternative II would be implemented following the 3-year period, and impacts would be as analyzed in that alternative.

CUSTODIAL (C) ALLOTMENTS

Three years of grazing season rest in Butte Tree, Chukar Park – North Pasture, Lockart Mountain, and Malheur River Allotments would accelerate recovery of woody and herbaceous vegetation in riparian areas. However, lack of treatment of western juniper would result in continuing decline of shrub grasslands and riparian systems, as western juniper would continue to invade these areas.

SUMMARY

Vegetation objectives would be met under Alternative III with the proposed grazing systems, various classes of livestock, and maximum allowable utilization levels. Objectives would not be met with proposed vegetation manipulation projects, because western juniper control would be minimal, resulting in the increased proliferation of this species and its adverse impacts on the diversity of plant communities in the GMA.

5.2 Forest and Woodlands

SEORMP ROD OBJECTIVE 1: Manage forests to maintain or restore ecosystems to a condition in which biodiversity is preserved, and in which occurrences of fire, insects, and disease do not exceed levels normally expected in a healthy forest. Increase the dominance of ponderosa pine, Douglas fir, and western larch on appropriate sites in mature forests. Decrease the amount of Douglas fir, white fir, and grand fir where they were not historically maintained by the dominant fire regime. Manage forests for long-term, healthy habitat for animal and plant species. Provide for timber production where feasible and compatible with forest health.

SEORMP ROD OBJECTIVE 2: Restore productivity and biodiversity in western juniper and quaking aspen woodland areas. Manage western juniper areas where encroachment or increased density is threatening other resource values. Retain old growth characteristics in historic western juniper sites not prone to frequent fire. Manage quaking aspen to maintain diversity of age classes and to allow for species reestablishment.

NFMGMA FOREST AND WOODLANDS OBJECTIVE: Restore productivity and age structure in quaking aspen stands, and reduce the dominance of western juniper outside of old-growth western juniper woodlands within the GMA.

5.2.1 Alternative I - Forest and Woodlands

Forest health issues identified in the affected environment section of this document would be addressed in separate documents outlining the scope of individual projects, and would discuss and evaluate impacts to forests and other values as part of the analysis of those projects. Until that time, health of conifer stands would continue to decline and be susceptible to insect attack, disease, and catastrophic stand replacing fires.

Western juniper treatments and renovation of aspen stands may occur on site-specific areas as developed by BLM or as requested by rangeland users. There would be no landscape-scale approach to management and renovation of western juniper encroachment and aspen. The objective to restore productivity and age structure of quaking aspen

stands would not be met under this alternative. Maintenance of old-growth western juniper woodlands would meet the objective, but without treatments to reduce western juniper expansion into other range sites, the objective would not be met overall.

SUMMARY

The forest management objective is not addressed in this EA. The western juniper objective would not be met, because western juniper control would be sporadic and unfocused. The aspen objective would not be met, because western juniper would not be controlled where necessary in aspen stands, and because grazing systems would not be modified to promote recovery and maintenance of aspen stands.

5.2.2 Alternative II - Forest and Woodlands

Forest health issues identified in the affected environment section of this document would be addressed in separate documents that would outline the scope of individual projects and would discuss and evaluate impacts to forests and other values as part of the analysis of those projects. Until that time, health of conifer stands would continue to decline and be susceptible to insect attack, disease, and catastrophic stand replacing fires.

Control of western juniper through cutting and burning treatments would occur on a priority basis across the GMA landscape as defined in the Appendix D, "All Projects", and would result in restored productivity and biodiversity on many thousands of acres. Each treatment unit would be evaluated prior to treatment so that historic, old-growth western juniper sites would be maintained. Renovation of aspen stands would occur at specific sites to promote diversity of age classes and maintain health of the stands. As funds would become available for western juniper and aspen treatment projects, the objective for western juniper and aspen management would be met under this alternative.

SUMMARY

The forest management objective is not addressed in this EA. The western juniper and aspen management objective would be met as time and funding permits to control western juniper across the landscape and in specific aspen stands. Initiation of proposed grazing systems would promote recovery and maintenance of aspen stands in a healthy condition.

5.2.3 Alternative III - Forest and Woodlands

Forest health issues identified in the affected environment section of this document would be addressed in separate documents that would outline the scope of individual projects and would discuss and evaluate impacts to forests and other values as part of the analysis of those projects. Until that time, health of conifer stands would continue to decline and be susceptible to insect attack, disease, and catastrophic stand replacing fires.

Control of western juniper would be limited to Priority 1 areas as defined in Appendix D. Reduced dominance of western juniper would be limited to those treatment areas where treatment is necessary to prevent further loss in special status species habitat, primarily greater sage grouse habitat, and would not occur on a landscape level across the GMA. Renovation of aspen stands would occur as analyzed in Alternative II. The objective for western juniper management would not be met under this alternative, but the objective for aspen management would be met.

SUMMARY

The forest management objective is not addressed in this EA. The western juniper objective would not be met under this alternative, and the objective for aspen management would be met.

5.3 Special Status Plant Species

SEORMP ROD OBJECTIVE: Manage public land to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions will 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.

NFMGMA SPECIAL STATUS PLANT OBJECTIVE 1: Maintain or increase population numbers of one List 2 special status plant species, porcupine sedge, found along the North Fork, Malheur River, in Dogwood Pasture.

NFMGMA SPECIAL STATUS PLANT OBJECTIVE 2: Continue to inventory for Oregon princesplume which occurs within the NFMGMA on land managed by the Bureau of Reclamation and maintain or improve populations numbers where found.

5.3.1 Alternative I - Special Status Plant Species

Changes have been made for grazing in Dogwood Pasture, which would maintain the health and vigor of the small population of porcupine sedge found near the Malheur River in this pasture. Two small populations of Oregon princesplume found near Beulah Reservoir occur on Bureau of Reclamation and private land and are not under BLM management.

SUMMARY

Special status plant objectives would be met under this alternative based on the health and vigor of the single plant site known, and under the current grazing system.

5.3.2 Alternative II - Special Status Plant Species

Maintenance of the grazing schedule as designed for Dogwood Pasture would result in good health and vigor of the small population of porcupine sedge found in this pasture near the Malheur River. Two small populations of Oregon princesplume found near Beulah Reservoir occur on Bureau of Reclamation and private land and are not under BLM management.

SUMMARY

Special status plant objectives would be met under this alternative based on the health and vigor of the single plant site known, and under the current grazing system.

5.3.3 Alternative III - Special Status Plant Species

Maintenance of the grazing schedule as designed for Dogwood Pasture would result in good health and vigor of the small population of porcupine sedge found in this pasture near the Malheur River. Two small populations of Oregon prince's plume found near Beulah Reservoir occur on Bureau of Reclamation and private land and are not under BLM management.

SUMMARY

Special status plant objectives would be met under this alternative based on the health and vigor of the single plant site known, and under the current grazing system.

5.4 Noxious Weeds

SEORMP ROD OBJECTIVE: Control the introduction and proliferation of noxious weed species and reduce the extent and density of established weed species to within acceptable limits.

NFMGMA NOXIOUS WEEDS OBJECTIVE: Continue control of Malheur County A-listed noxious weeds where they currently occur and continue inventory as funding allows.

5.4.1 Alternative I - Noxious Weeds

Under the existing situation, noxious weed sites would continue to be monitored and treated as time and funding allow, with inventory continuing to be focused in areas of high values such as WSAs and ACECs. Spread of noxious weeds either from existing sites or from new establishments would not be affected significantly by actions authorized in this alternative. Currently, few impacts from the existing grazing situation are thought to contribute to the spread of noxious weeds. Livestock may transport weeds in mud caked on hooves or hides, or in fecal material if weed seeds have been ingested, but there would be no changes in likelihood of weed transport by livestock under this alternative. Minimal projects would be constructed, with little or no new ground disturbance that would provide suitable substrates for weed establishment. Weed response in western juniper treatment areas, which are limited in this alternative, would depend on the initial floristics of each plant community. Miller, Bates, Svejcar,

Pierson, and Eddleman, 2005, report that cheatgrass and medusahead, particularly when present at the beginning of a western juniper control project using broadcast burning, would increase in density and cover. However, they report that in some areas increase in native perennials released from western juniper competition was followed by a significant decline in cheatgrass.

SUMMARY

The noxious weed objective would be met under this alternative as time and funding allows.

5.4.2 Alternative II - Noxious Weeds

Noxious weed sites would continue to be monitored and treated as time and funding allow, with the focus on inventory in areas of high values such as WSAs and ACECs. As described in Alternative I, no new or significant impacts from grazing would contribute to the spread of noxious weeds because livestock numbers would not change. As rangeland plant communities move toward the later seral conditions with the rotational grazing proposed in this alternative, sites available for colonization by weeds such as medusahead and cheatgrass would be diminished as native species more fully occupy their respective communities. Ground disturbances as a result of project construction would result in exposed soils that would provide sites for weed establishment. However, planting of grass species following project construction would provide competition that would limit establishment of weeds. Weed response in western juniper treatment areas would be as described in Alternative I. Although a higher level of western juniper control is proposed in this alternative, individual site responses would depend on the initial floristics of the communities to be treated as discussed in Miller et al (2005). Weed treatment would be limited by design (see Priority Treatment Areas description in Appendix D).

SUMMARY

The noxious weed objective would be met under this alternative as time and funding allows.

5.4.3 Alternative III - Noxious Weeds

Impacts to the spread of noxious weeds would be as described in Alternative III. With the proposed 33 years of rest from grazing, some plant communities would be expected to move toward the later seral conditions, making sites less vulnerable to invasion of noxious weeds, particularly annual species such as medusahead and cheatgrass. Reductions in numbers of domestic animals for the 3-year period also would lessen likelihood of transport of noxious weed seeds by means of livestock. The limited control of western juniper in this alternative would result in little impact to the spread of noxious weeds; any impacts would be as described in Alternative I.

SUMMARY

The noxious weed objective would be met under this alternative as time and funding allows.

5.5 Rangeland/Grazing Use

SEORMP ROD OBJECTIVE: Provide for a sustained level of livestock grazing consistent with other resource objectives and public land use allocations.

NFMGMA RANGELAND/GRAZING USE OBJECTIVE: Provide for a sustained level of livestock grazing consistent with other resource objectives and public land use allocations.

5.5.1 Alternative I - Rangeland/Grazing Use

GENERAL IMPACTS

Alternative I continues the authorization of livestock grazing use consistent with multiple use and sustained yield objectives, as identified in current allotment management plans (AMPs) and annual livestock turnout statements. Resource values or sensitive habitats would receive management emphasis at present levels as shown in the current AMPs. However, SEORMP ROD management objectives and consistency with S&Gs would not be immediately met in 45 pastures in 11 allotments except where individual rangeland improvement projects would be implemented. Explanations for failure to meet these SEORMP objectives are described in "Allotment Determinations" in the Initial EA Appendix C.

Under this alternative, adjustments to terms and conditions of livestock grazing authorization, based on periodic allotment evaluations, would be implemented to make progress toward meeting objectives identified in current allotment management plans and S&Gs. There would be no immediate impact to livestock permittees in the short term. Administrative solutions, including reductions in levels of authorized livestock use, or increases in voluntary nonuse, would be considered through the allotment evaluation process. Structural rangeland improvements and vegetative treatments would be implemented on a case-by-case basis, as appropriate, to mitigate adverse impacts, access underutilized forage resources, and improve livestock distribution. Vegetative manipulation projects that emphasize the conversion of less productive annual vegetative communities to productive perennial communities would be implemented. Utilization limits would remain as designated in the current AMPs or other land use plans. In this alternative the maximum allowable utilization levels would be 40% in sage grouse habitats and/or where native range upland trends have been determined to be downward, 50% in native range or seedings with downward upland trend, and 60% in seedings with static or upward upland trends.

Livestock grazing use in this alternative would be the same as described in the Determinations and in the tables shown below. Current permitted AUMs, average actual use, average utilization, and current stocking rates for each allotment were shown in the Draft EA Appendix G.

This alternative would limit range improvement projects to only those proposed on a case-by-case basis, and each project would be evaluated individually as funding and staffing allow. Standard implementation procedures for construction of rangeland improvements would be followed and are described in the SEORMP Appendix S, "Standard Implementation Features and Procedures." Grazing permittees would be responsible for project maintenance and construction.

Livestock management actions implemented under this alternative in allotments with deferred or rest-rotation grazing systems would continue to benefit livestock grazing. Although short-term direct impacts to continuous livestock grazing may be minimal, long-term impacts would be realized due to continued declines in forage conditions.

The following tables show livestock numbers, use period, active AUMs by allotment and permittee, and current grazing schedules for allotments that have current allotment management plans or use authorized with annual turnout statements.

ALLOTMENT-BY-ALLOTMENT IMPACTS IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Agency Mountain Allotment

The Agency Mountain Allotment consists of four pastures, Water Gulch, Agency Mountain, Reservoir Field, and Orchard. The Orchard Pasture is Fenced Federal Range (FFR). The Reservoir Field is managed by the Bureau of Reclamation, which administers most of the acreage within the pasture. The SEORMP shows an active preference of 1,400 AUMs within this allotment. During the assessment, it was determined that the Angus Pasture was within the boundaries of the Castle Rock Allotment and not within the Agency Mountain Allotment. In 2002, operator # 3603105 purchased private land associated with the Angus Pasture in the Castle Rock Allotment. Twenty active AUMs were attached to the BLM land in the Angus Pasture, and these AUMs would be transferred from the Agency Mountain Allotment to the Castle Rock Allotment and would be reflected in the renewed 10-year permit.

The Agency Mountain Allotment exhibits indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within this allotment.

Table 13. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for Agency Mountain Allotment.

Allotment	Use period	Number of Livestock	Active AUMs
Agency Mountain Allotment	4/1-10/31	197	1,380
Pasture	Year 1	Year 2	Year 3
Water Gulch	06/01-10/31	06/15-10/31	06/01-10/31
Agency Mountain	Rest	04/01-6/15	Rest
Reservoir Field	FFR		
Orchard Pasture			

This allotment does not have an Allotment Management Plan (AMP). Grazing in the allotment has been in accordance with a grazing schedule determined in meetings with the range permittees and BLM representatives prior to turnout.

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in the Agency Mountain and Reservoir Field are shown in the Rangeland Health Determinations.

Allotment # 6

Allotment # 6 is currently divided into two pastures, Juniper Gulch and the Malheur River Stream Enclosure (STEX). The STEX is excluded from grazing use.

Table 14. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for Allotment # 6.

Allotment	Use period	Number of Livestock	Active AUMs
Allotment #6	3/15-5/15	430	1,201
Pasture	Year 1	Year 2	Year 3
Juniper Gulch	3/15 – 5/15	8/15 – 11/15	Rest
Malheur River STEX	Excluded	Excluded	Excluded

Grazing in this allotment is according to the AMP (1999) for the allotment.

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in Juniper Gulch are shown in the Rangeland Health Determinations.

Beulah Allotment

The original Beulah Reservoir Allotment (MFP 1979) was divided into three allotments in 1988, Calf Creek #00162, Agency Mountain #00161, and Beulah Reservoir #10217. The SEORMP showed that the Beulah Reservoir Allotment contained a pasture named the East MJ Field. During field surveys in 1999, it was determined that this pasture was actually part of the Little Malheur Pasture of the Whitley Canyon Allotment (#10216). In 2002, operator # 3603118 purchased private land associated with the Little Malheur Pasture. Sixty active AUMs were attached to the BLM land within the pasture. Transfer of 60 AUMs from the Beulah Reservoir Allotment to the Whitley Canyon Allotment would be shown in the renewed 10-year permit.

Beulah Allotment exhibits indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within these allotments through the adaptive management process.

Table 15. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for the Beulah Allotment.

Allotment	Use period	Number of Livestock	Active AUMs
Beulah Allotment operator #3603154	3/1-101/31	123	991
Beulah Allotment operator #3603431	3/1-101/31	116	931
Pasture	Year 1	Year 2	Year 3
Antelope	6/15-10/31	6/15-10/31	7/1-10/31
Lower Poverty	4/1-5/15	Rest	4/1-5/15
Upper Poverty	5/16-7/1	Rest	5/16-7/1
Moonshine	3/20-5/1	3/20-5/1	4/1-5/1
Jack Creek	3/15-6/1	3/15-6/1	3/15-5/1
Big Seeding	5/1-6/15	Rest	4/1-6/15
Burnt Field	Rest	Rest	3/15-6/1
Scab	3/15-5/1	3/15-5/1	3/15-5/1
Little Seeding	Rest	5/1-6/15	Rest
West MJ Field	7/1-10/31	7/1-10/31	7/1-10/31
River Field	Rest	Rest	Rest
Bennett	4/1-6/15	4/1-6/15	Rest
Poverty Flat	FFR		
Mud Springs	TU AGREE ¹	-	-
Horse	TU AGREE ¹	-	-
Upper Creek	TU AGREE ¹	-	-
Cottonwood Creek	TU AGREE ¹	-	-
Creek	TU AGREE ¹	-	-
North Homestead	TU AGREE ¹	-	-

¹ Trade Use Agreement for management of private land along the North Fork Malheur River.

The allotment does not have an AMP. Grazing in this allotment has been in accordance with a grazing schedule determined in meetings with the permittees and BLM representatives prior to turnout.

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in the Antelope, Lower Poverty, Upper Poverty, Moonshine, Jack Creek, Burnt Field, Scab, Little Seeding, Bennett, Creek, North Homestead, McClellan Pastures are shown in the Rangeland Health Determinations.

Calf Creek Allotment

Calf Creek Allotment is divided into nine pastures. During S&Gs assessments in 2000, BLM personnel determined that Cave Creek Riparian Pasture does not exist. The SEORMP of 2002 inaccurately shows Calf Creek Allotment to have 1,793 AUMs currently allocated for livestock. The actual allocation is 2,270 AUMs. Two grazing permittees were not identified in the SEORMP, but have held permitted AUMs in this allotment.

The Calf Creek Allotment exhibits indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within this allotment.

Table 16. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for the Calf Creek Allotment.

Allotment	Use Period	Number of Livestock	Active AUMs
Calf Creek Allotment operator # 3603430	3/1-10/31	218	1,793
Calf Creek Allotment operator # 3603154	3/1-10/31	36	288
Calf Creek Allotment operator # 3603431	3/1-10/31	36	288

Pasture	Year 1	Year 2	Year 3	Year 4
Stemler Basin	3/15-6/15	Rest	3/15-6/15	Rest
Dishrag	6/15-10/31	7/15-10/31	6/15-10/31	6/1-10/31
Cave Creek	Rest	Rest	Rest	3/10-6/01
Lake Ridge	5/1-8/30	6/1-7/15	6/15-10/31	Rest
Lower Calf Creek	Rest	3/15-5/15	Rest	3/1-5/31
Upper Calf Creek	4/1-5/1	5/1-5/30	4/1-5/1	Rest
Chalk Camp	Rest	5/15-6/15	Rest	6/1-7/30

The allotment does not have an AMP. Grazing in the Calf Creek Allotment has been in accordance with grazing systems determined in meetings with the range permittees and BLM representatives prior to turnout.

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in all the pastures within this allotment are shown in the Rangeland Health Determinations.

Castle Rock Allotment

Castle Rock Allotment is divided into 15 pastures. Livestock grazing in North Rockpile and Water Gulch pastures is administered in concurrence with USFWS and adheres to terms and conditions of a biological opinion for grazing activities on the North Fork Malheur River.

During the assessment it was determined that the Angus pasture was within the boundaries of the Castle Rock Allotment and not within the Agency Mountain Allotment. In 2002, operator # 3603105 purchased private land associated with the Angus pasture in the Castle Rock Allotment. Twenty active AUMs were attached to the BLM land in the Angus pasture and these AUMs would be transferred from the Agency Mountain Allotment to the Castle Rock Allotment and would be reflected in the renewed 10-year permit.

Grazing use in Castle Rock Allotment is consistent with the Castle Rock AMP (1993). The allotment is currently divided into 15 pastures.

Table 17. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for the Castle Rock Allotment.

Allotment	Use Period	Number of Livestock	Active AUMs
Castle Rock Allotment	4/01 - 10/30	688	4,816
Pasture	Year 1	Year 2	Year 3
Castle Rock	Rest	3/20 - 4/30	5/01 - 6/30
Clevenger Butte #1	7/1 - 11/15	5/15 - 6/30	4/1 - 4/30
Clevenger Butte #2	7/1 - 11/15	4/1 - 4/30	5/15 - 6/30
Duck Pond	7/1 - 11/15	3/20 - 4/30	5/1 - 6/30
South Rockpile	3/20-6/15	Rest	3/20-6/15
North Rockpile	Rest	3/20-6/15	Rest
House	Rest	4/1-7/1	Rest
Poison	6/15-8/15	7/1-11/15	6/15 - 8/15
Heifer	4/1 - 6/30	7/1 - 11/15	7/1-11/15
Hat Butte	7/1-11/15	6/15 - 8/15	7/1 - 11/15
Sheep Rock	4/1 - 6/30	7/1-11/15	7/1-11/15
East Rockpile	Gathering	Gathering	Gathering
House FFR	FFR		
FFR			
Water Gulch FFR			
Little Malheur FFR			
Angus	Rest	Rest	Rest

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in the Castle Rock, Clevenger Butte #1, Clevenger Butte#2, Duck Pond, House, Poison, Heifer, Hat Butte, and Sheep Rock Pastures are shown in the Rangeland Health Determinations. Some minor changes in grazing schedule were made in 2000 to improve resource conditions within the current authorization.

DeArmond-Murphy Allotment

DeArmond-Murphy Allotment consists of 26 pastures and grazing use is consistent with the DeArmond-Murphy AMP (1986).

Table 18. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for the DeArmond-Murphy Allotment.

Allotment	Use period	Number of Livestock	Active AUMs
DeArmond-Murphy Allotment	4/1-10/31	865	6,086
	11/1-11/30	421	421
Pasture	Year 1	Year 2	Year 3
Mahogany Mountain	Rest	4/1-7/15	6/1-7/15
Pole Gulch	Rest	4/1-7/15	6/1-7/15
Castle Rock	7/15-10/31	7/15-10/31	7/15-10/31
Beulah Seeding	4/1-6/1	4/1-4/15	4/1-6/1
Hunter Mountain	Rest	4/1-6/1	Rest
Hunter Creek	4/1-6/1	Rest	4/1-6/1
Morton	4/1-7/15	5/1-7/15	Rest
Butler	4/1-7/15	5/1-7/15	Rest
Murphy Reservoir	4/1-5/30	4/1-5/30	4/1-5/30
West Bendire	4/1-4/30	4/1-4/30	4/1-4/30
East Bendire	4/1-4/30	4/1-4/30	4/1-4/30
Pasture	Year 1	Year 2	Year 3
West Munker	4/1-4/30	4/1-4/30	4/1-4/30
North Munker	4/15-7/1	Rest	4/15-7/1
South Munker	Rest	4/15-7/1	Rest
Earp FFR	FFR		
Lost Creek			
Warm Spring Creek			
Upper Warm Spring Creek			
Emmigrant Hill	6/1-7/15	Rest	4/1-7/15
School Section	FFR		
Homestead			
FFR			
FFR			
FFR			

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in the Castle Rock, Beulah seeding, Hunter Mountain, and Hunter Creek pastures are shown in the Rangeland Health Determinations

Whitley Canyon Allotment

Whitley Canyon Allotment is divided into seven pastures. The SEORMP showed Whitley Canyon Allotment to have an active grazing preference of 2,374 AUMs. Also in the SEORMP, the Beulah Reservoir Allotment included a pasture named the East MJ Field. During field surveys in 2000, it was determined that this pasture was in fact part of the Little Malheur Pasture of the Whitley Canyon Allotment. In 2002, operator # 3603118 purchased private land associated with the Little Malheur Pasture. Sixty Active AUMs were attached to the BLM land within the pasture.

Transfer of 60 AUMs from the Beulah Reservoir Allotment to the Whitley Canyon Allotment would be shown in the renewed 10-year permit.

Table 19. Use Period, Livestock Number, Active AUMs, and Grazing Schedule for the Whitley Canyon Allotment.

Allotment	Use Period	Livestock Numbers	Active AUMs
Whitley Canyon #3601553	6/1-10/29	107	531
Whitley Canyon #3601545	4/1-6/30	337	1,008
Whitley Canyon #3601545	8/07-10/31	295	834
Whitley Canyon #3601545	4/1-4/31	3	3
Pasture			
Pasture	Year 1	Year 2	Year 3
Burnt Mountain	Rest	4/1-4/30	5/1-7/31
Pete's Mountain	4/1-5/31	Rest	4/1-4/30
West Juniper	4/1-6/30	8/1-10/31	Rest
Little Malheur	7/1-10/31	5/15-7/31	8/1-10/31
PJ #2 FFR	FFR		
PJ #1 FFR	Gathering		
Dogwood	Rest	3/20-6/15	Rest
River	Rest	3/20-6/15	Rest

Grazing use in Whitley Canyon Allotment is consistent with the Whitley Canyon Allotment Management Plan (1988).

A Biological Opinion (BO) has been established with the US Fish and Wildlife Service concerning the BLM's grazing program in the Dogwood and River Pastures, and grazing effects on bull trout within NFMGMA. The grazing sequence for the Dogwood and River Pastures will remain the same as that in the BO.

Where the S&Gs were not met in 2000, continuation of the existing grazing schedule would be inconsistent with S&Gs requirements. Those standards not being met in the Pete's Mountain, Dogwood, and River Field pastures are shown in the Rangeland Health Determinations.

CUSTODIAL (C) ALLOTMENTS

Background

Assessments of S&Gs were completed on public lands within all C Allotments. Standards were not met in Butte Tree, Bridge Creek, Ironside West, Chukar Park, Malheur River, Lockhart Mountain, and Ring Butte Allotments. Some range improvement projects were completed under separate NEPA analysis in order to make progress in meeting S&Gs. In another case, an agreement was negotiated between BLM and the livestock permittee to implement a grazing schedule in order to make progress toward meeting S&Gs.

Three projects were completed under separate NEPA analysis within C allotments as a result of not meeting S&Gs. These projects included the reconstruction of two springs (one in Bridge Creek West Allotment and the other in Ring Butte Allotment) and an enclosure fence in Chukar Park Allotment.

Table 20. Allotment, Permittee, Use Period, Livestock Number, and Active AUMs for the Custodial Allotments in the NFMGMA.

Allotment	Operator Number	Use Period*	Active AUMs
Bridge Creek	3603103	4/1-4/30	4
Butte Tree	3601553	5/1-5/30	68
Cottonwood Creek	3603130	6/1-9/30	68
Chukar Park	3603215	11/1-11/30	35
Ironside Mountain West	3601553	4/1-4/30	124
Ironside Mountain East	3600260	4/1-4/30	140
Kivett	3603038	6/1-6/30	26
Lockhart Mountain	3603128	4/1-4/30	211
Malheur River	3603121	9/1-9/30	42
Malheur River	3600205	4/1-4/30	11
South Willow Creek	3603153	5/1-9/30	86
Squaw Butte	3603038	10/1-10/30	35
Ring Butte	3603103	4/1-4/30	32

* The identified use period is for permitting only. The actual dates of use may vary as long as no damage to the public land occurs.

Bridge Creek West Allotment

Standards 2, 4, and 5 were not met in this allotment due to current livestock grazing. Under a separate NEPA analysis (CE-OR-030-06-007) a riparian exclosure and spring reconstruction were completed to eliminate the influence of grazing in the area not meeting standards. With these projects in place, S&Gs would be met in this allotment. Rangeland Health Summaries and Determination for this allotment are found in the Rangeland Health Determinations.

Butte Tree Allotment

Standards 3, 4, and 5 were not met in this allotment due to current livestock grazing. Continuation of current grazing practices would be expected to maintain undesirable resource conditions and would be inconsistent with S&Gs regulations. However, grazing modifications were instituted in 2005 in order to make progress toward meeting S&Gs. The pasture received rest in 2005, and through a livestock use agreement, would receive livestock use every other year for 5 years. If monitoring shows that the maximum allowable utilization is exceeded during the 5-year period, this allotment would then be incorporated into the rotation of the Whitley Canyon Allotment. It is anticipated that the grazing use implemented as part of the agreement would result in progress toward meeting the S&Gs, with minimal impact to the grazing operation. Rest periods would place a minor burden on the permittee's grazing operation, but would benefit the operation by providing increased availability of residual forage for livestock. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Cottonwood Creek Allotment

The S&Gs determinations concluded that Standards 3 and 5 were not met, but were due to factors other than current livestock grazing. Major improvements have taken place in this allotment since the determinations were completed, and riparian vegetation on private land has been fenced. Current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Chukar Park Allotment

Standards 1, 3, and 5 were not met within the Chukar North Pasture of this allotment due to current livestock grazing. A new exclosure fence was constructed under separate NEPA analysis (EA-OR-030-04-009) to eliminate an adjacent landowner's unauthorized livestock from accessing BLM land. As a result of this project, resource conditions have improved within the Chukar North Pasture. However, Chukar North Pasture would be grazed on an annual basis, and progress toward meeting S&Gs would be slow. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Ironside Mountain West Allotment

Standards 2 and 4 were not met in this allotment at the time S&Gs were conducted. However, the IDT members revisited the site in 2003 and observed significant progress toward meeting the standards. In 2004, western juniper trees and dead aspen were jackstrawed to protect riparian habitat, which promoted conditions that have allowed the ID team to document that S&Gs were met. Current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Ironside Mountain East Allotment

Standards 3 and 5 were not met in this allotment due to plant community health (lack of age class diversity). Evaluation of resource data indicated that livestock grazing was not a factor contributing to not meeting the standards. Current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Kivett Allotment

Within the Kivett Allotment, all S&Gs were met. Since publication of the Determinations, major improvements have taken place in this allotment by fencing off the riparian vegetation along the Little Malheur River, and aspen stands on private land. Current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Lockhart Mountain Allotment

The Six-forty Pasture (referred to as the East Side Pasture in the determination) is predominately BLM ownership, and Standards 2, 4, and 5 were not met due to current livestock grazing. Continuation of current grazing practices would be expected to maintain undesirable resource conditions and would be inconsistent with S&Gs regulations. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Malheur River Allotment

In the Malheur River Allotment, two pastures are grazed after seed ripe every year. Little Malheur Riparian Exclosure is currently excluded from livestock grazing. Standards 2, 3, 4, and 5 were not met in the Malheur River Pasture, and current livestock grazing was determined to be a contributing factor. Continuation of current grazing practices would be expected to maintain undesirable resource conditions and would be inconsistent with S&Gs regulations. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Squaw Butte Allotment

S&Gs in the Squaw Butte Allotment were met. Current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

South Willow Creek Allotment

While not all S&Gs were met, it was determined that current livestock grazing was not a contributing factor. Current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit within this allotment. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

Ring Butte Allotment

Standards 2, 4, and 5 were not met in this allotment due to current livestock grazing. Under a separate NEPA analysis (CE-OR-030-04-29), a riparian exclosure was constructed to eliminate the influence of grazing from the areas not meeting standards. Continuation of current management would be expected to maintain resource conditions and provide forage for livestock as authorized in the existing permit. Rangeland Health Summary and Determination for this allotment is found in the Rangeland Health Determinations.

SUMMARY

Under this alternative, the livestock grazing use objectives in C allotments would be not met in a manner consistent with the S&Gs or SEORMP.

5.5.2 Alternative II - Rangeland/Grazing Use

GENERAL IMPACTS

Alternative II proposes adjustments to the sequences and timing of grazing use for most NFMGMA permittees in order to meet S&Gs. Along with voluntary non-use in some allotments, revised grazing schedules, lowering target utilization levels, and development of additional range improvement projects, progress toward meeting all standards is anticipated.

Revised grazing schedules were developed considering pasture carrying capacity levels and are shown in Appendix C, "Alternative II Grazing Schedules." Total average AUMs available for livestock within existing allotments would remain unchanged or reduced through voluntary non-use.

Revised, proposed grazing schedules in this alternative would increase frequency of livestock moves and trailing compared to the current situation because some permittees would remove their cattle and/or sheep from the allotments early in the grazing season to rest certain pastures and would bring them back in the fall to allow for late season grazing. New grazing rotations would require livestock operators to gather and move their livestock more often than under current management in order to protect riparian communities and meet water quality standards. Livestock permittees would incur slight increases in operation and labor costs due to increased herding.

Some grazing permittees in the NFMGMA were willing to adjust livestock numbers lower than their current grazing preference to accelerate progress toward meeting the standards. The allotment-by-allotment discussion below shows the amount of voluntary temporary non-use agreed to by some permittees. The voluntary temporary reduction in use was implemented in 2006 and 2007 for the first full grazing rotation within the affected allotments, and would be a term and condition on the renewed term permit for 2008 where applicable.

In native pastures grazed in the spring season (March through June), or in pastures with downward upland trends (as identified by the assessment data), maximum allowable utilization levels would be "light" (21%-40%). All other native pastures showing a static or upward trend and located outside a 2-mile radius of a known sage-grouse lek would be grazed with a maximum allowable utilization of 50%, which is in the range of "moderate" (41%-60%). Native pastures grazed within a 2-mile radius of a known lek would retain the "light" utilization levels. Non-native seedings with static or upward trends would have a maximum allowable utilization of 50%. Non-native seedings with downward trend would have a maximum allowable utilization of 40%. Pastures with riparian concerns would have a 30% maximum allowable utilization of current year's growth on woody riparian vegetation (as determined by Cole Browse methodology) and a minimum allowable herbaceous riparian vegetation stubble height of 4-6 inches. The riparian stubble height may have to be adjusted upward for the geology and hydrology of individual riparian systems. Pastures within identified big game wintering areas would have a 30% maximum allowable utilization of current year's growth of bitterbrush, aspen, and mountain shrubs (as determined by Cole Browse methodology). This adjustment in allowable utilization could potentially limit the public land grazing use period, particularly during years of below average production and/or drought.

For ease of operation, 4 days of flexibility in turn-out/gathering would be beneficial to area livestock operators. This flexibility would allow for changes in use dates to accommodate for climactic conditions or other issues as they arise. Move dates outside of the 4-day allowance would be considered by BLM staff at the time of the request.

Under this alternative numerous rangeland improvements would be proposed for construction. They include approximately 10 miles of new and/or reconstructed pasture fencing, 77 spring project renovations (and associated enclosure fencing), 2 miles of new pipelines, two new spring developments, four reservoir reconstructions, and upland vegetation treatments (western juniper management, sagebrush mowing, and annual rangeland restoration) on up to approximately 86,000 acres. There are small areas of annual rangelands scattered throughout the area. Currently, these small areas are not a significant threat to rangeland health. However, as time and funding become available, these areas may be treated to re-establish perennial native or adapted non-native vegetation. This may be accomplished with wild or prescribed fire, herbicides, or mechanically as appropriate. Most of the 86,000 acres of

treatments would be western juniper management. The location, number, and types of projects by pasture and allotment for Alternative II are shown in Appendix D. Development of new rangeland water projects, division fences, and exclosures would impact livestock operations. Livestock permittees would incur increases in operation and labor costs due to project implementation and maintenance.

Impacts from vegetation manipulation may have a short-term negative effect on grazing permittees within their grazing allotment. Total rest from grazing use in some pastures may occur, and temporary reductions in active AUMs to permittees may result for two growing seasons. If a project area is smaller than total pasture size, temporary livestock fences may be built in some areas. Overall, as a secondary effect of western juniper treatment, increased forage production is likely as competition from invasive western juniper is managed.

Subdividing a few large pastures where the S&Gs are not being met due to livestock grazing in the Agency Mountain, Malheur River, Calf Creek, Beulah, and DeArmond-Murphy Allotments would enable livestock permittees to make progress toward meeting S&Gs requirements. Smaller pastures would make it easier for operators to locate, work, and move livestock, and pasture utilization would be more uniform.

Exclosure fencing would occur at numerous spring sites throughout most allotments as shown in Appendix D. Spring developments would have high priority and would occur in pastures receiving hot season of use and riparian areas that contain aspen stands. Fences necessary to protect riparian areas would require additional maintenance responsibilities for permittees. A small amount of forage would become unavailable in exclosures; however, no reductions in available AUMs would result from construction of these projects.

**ALLOTMENT-BY-ALLOTMENT IMPACTS
IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS**

Agency Mountain Allotment

Within the Agency Mountain Allotment, one-pasture division fence would be constructed in Agency Mountain pasture totaling approximately 1.5 linear miles. This fence, in combination with proposed spring reconstruction projects, would allow for the implementation of the grazing schedule shown below. One spring redevelopment and riparian fence is planned at Agency Spring within the Agency Mountain Pasture. Western juniper treatment would occur on 2,525 acres within the allotment.

Beulah FFR Pasture was added to this allotment as a result of incorporating previously unallotted BLM parcels. Reservoir Field would be managed as FFR due to the high percentage of private land, and Orchard FFR would be grazed 1 out of 3 years as shown below:

Table 21. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for the Agency Mountain Allotment.

Allotment	Use period	Number of Livestock		Active AUMs
Agency Mountain Allotment	4/1-9/15	225		1,243
	9/16-10/31	50		77
	4/1-5/15	170		50
	10/-10/15	105		10
PASTURE				
	Year 1 and Year 4	Year 2	Year 5	Year 3 and Year 6
Agency Mountain	5/1-6/15 333AUM	9/15-10/31 76AUM	4/1-5/1 229AUM	4/1-5/7 274AUM
North Agency Mountain	4/1-5/1 229AUM	4/1-5/1 229AUM	9/16-10/31 76AUM	5/8-6/14 281 AUM
Water Gulch	6/15-10/31 756AUM	6/15-9/15 762AUM	6/5-9/15 762AUM	6/15-10/31 756AUM
Orchard FFR	FFR	4/15-6/15 Sheep	4/15-6/15 Sheep	FFR
Reservoir Field/ Beulah FFR	4/15-6/15 Sheep	FFR	FFR	4/1-5/15 Sheep*

*4/1-5/15 Sheep indicates 50 AUMS of spring sheep use; 10 AUMS of sheep use would occur in the fall.
 No cattle use would occur in Years 2 and 4 from 5/2 to 6/4 for an estimated 251 AUMS of Non-Use.

The Agency Mountain Allotment exhibits indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within this allotment.

Implementation of the proposed grazing schedule and projects in the Agency Mountain Allotment would allow resource conditions to improve and make progress toward meeting Standards 2, 4, and 5 within the Agency Mountain and Reservoir Field Pastures.

Allotment # 6

Change in season of use to late season use every year with a maximum allowable utilization limit of 30% on bitterbrush is anticipated to improve both the upland and riparian resources. If the utilization limit on bitterbrush were exceeded within the scheduled use period, the grazing permittee would be required to remove all livestock from the allotment.

Recommendation would be to seal Stemler Ridge, Adobe, and Dugout Reservoirs with bentonite. If reservoirs fail to hold water late in the grazing season, these projects would be abandoned and a proposed well and 1.1 mile of pipeline with two troughs may be constructed after one grazing cycle is completed. Two spring sites are proposed for redevelopment, and their associated riparian areas would be fenced. Western juniper treatment would occur on 5,038 acres in the Juniper Gulch pasture.

Table 22. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for Allotment # 6.

Allotment	Use period	Number of Livestock	Active AUMs
Allotment #6	10/31-3/1	240	1,201
Pasture	Year 1	Year 2	Year 3
Juniper Gulch	10/1 - 3/1	10/1 - 3/1	10/1 - 3/1

Implementation of the new grazing schedule and range improvement projects would allow resource conditions to improve and make progress toward meeting Standards 2 and 5 within the allotment. Changing the season of use to late use should reduce grazing pressure within the riparian areas and improve livestock distribution.

Beulah Allotment

Livestock grazing within the allotment would remain divided into two areas of use, excluding the Moonshine pasture that would be utilized in common by both operators. Total AUMs would be divided between the two permittees and would be reflected in each of their renewed 10-year grazing permits. In summary, operator # 3603154 would have a grazing preference of 702 active AUMs, 0 suspended AUMs, in Beulah Allotment, and the area of use would be limited to those pastures reflected by an asterisk* in the proposed Beulah Allotment grazing schedule (Table 23). The remaining pastures in Beulah Allotment would be utilized by operator # 3603431. Operator # 3603431s grazing preference would be 1,220 active AUMs and 0 suspended AUMs.

Additional range improvement projects have been identified in this allotment to make progress toward meeting the S&Gs. Approximately two miles of fence would be reconstructed between Jack Creek, Lower Poverty, and Upper Poverty Pastures to eliminate livestock trailing from one pasture to another. In order to facilitate upland deferment in the North Homestead Pasture, approximately 1.5 miles of fence would be constructed along the road that bisects the area, creating two separate pastures. Vegetation management (sagebrush mowing and seeding) on approximately 125 acres has been identified in Big and Little Seeding pastures. This project would reduce sagebrush density and increase grass and forb production on approximately 45% of the Little Seeding Pasture, and 11% of the Big Seeding Pasture. The brush-beating would be implemented in a mosaic pattern to meet sage-grouse habitat cover guidelines.

Six spring sites and two reservoirs are proposed for redevelopment and riparian areas would be fenced. Western juniper treatment would occur on 11,300 acres within all pastures in the allotment.

New FFR pastures have been identified to be added to this allotment due to incorporating previously unallocated BLM parcels as shown in the Beulah Allotment Table.

Below is the proposed grazing schedule for this allotment.

Table 23. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for the Beulah Allotment.

Allotment	Use period	Number of Livestock	Active AUMs	
Beulah Allotment Operator [REDACTED] Joyce	3/15-10/31	91 Cattle	686	
	3/15-4/15	16 Cattle	16	
Beulah Allotment Operator # 3603431	3/15-4/1	218 Cattle	129	
	3/20-5/1	180 Sheep	51	
	4/1-6/7	250 Cattle	559	
	6/8-7/1	150 Cattle	118	
	4/1-4/30	30 Sheep	6	
	4/1-4/30	6 Cattle	6	
	9/1-9/15	75 Cattle	37	
	9/16-12/1	124 Cattle	314	
Pasture	Year 1	Year 2	Year 3	Year 4
Big Seeding ¹	5/11-6/1 66AUM	4/15-5/01 59AUM	3/14-4/18 121AUM	Same as Year 1
Antelope ¹	6/18-10/5 329AUM	6/1-10/3 374AUM	5/15-9/1 329AUM	Same as Year 1
Scab ¹	3/14-4/21 135AUM	5/1-5/20 57AUM	4/19-5/14 87AUM	Same as Year 1
McClellan ¹	4/22-5/10 62AUM	3/20-4/14 90AUM	10/15-12/15 65AUM	Same as Year 1
Little Seeding ¹	FFR	FFR	FFR	Same as Year 1
Moonshine ²	3/20-5/1 (160AUM)	3/20-5/1 (110AUM) 3/20-5/1 (50AUM)	3/20-5/1 (160AUM)	3/20-5/1 (110AUM) 3/20-5/1 (50AUM)
Jack Creek	3/15-4/7 (172AUM) 3/15-4/7 (50AUM)	3/15-4/15 (222AUM)	4/21-5/21 (223AUM) 4/21-5/21 (50AUM)	3/15-4/14 (222AUM)
Upper Poverty	4/7-5/1 H (118AUM)	9/1-10/7 C+A (91AUM)	3/20-4/20 (129AUM)	5/1-5/21 (150AUM)
Lower Poverty	5/1-5/15 H (69AUM)	10/7-11/4 C+A (69AUM)	3/20-4/20 (100AUM)	4/14-5/1 (115AUM)
Burnt Field	5/1-6/1 (58AUM)	4/15-4/21 (50AUM)	Trailing (20AUM)	Trailing (20AUM)
Bennett	Trailing (20AUM)	Trailing (20AUM)	5/21-6/1 (79AUM)	10/1-11/1 A (53AUM)
North East Homestead	9/14-11/1 (242AUM)	4/21-5/21 (215AUM)	6/1-6/21 (143AUM)	10/1-11/1 (105AUM)

Pasture	Year 1	Year 2	Year 3	Year 4
North West Homestead	6/8-6/21 (117AUM)	5/21-6/10 (143AUM)	9/1-10/1 H (92AUM)	10/1-11/1 (158AUM)
West MJ	5/15-6/7 (191AUM) <i>5/15-6/7 (50AUM)</i>	10/1-11/21 (256AUM)	10/1-11/7 (240AUM)	5/21-6/14 (169AUM) <i>5/2-6/10 (50AUM)</i>
Mud Springs	6/1-6/21 (38AUM)	5/1-6/1 (22 AUM) <i>5/1-6/1 (36AUM)</i>	<i>5/21-6/21 (50AUM)</i>	9/1-10/1 (67AUM)

¹ Indicates fields utilized by operator # 3603154.

² Moonshine pasture would be shared by operators # [REDACTED] [REDACTED] with each permittee not utilizing over 80 AUMS each.

Italicized text indicates sheep use by permittee operator # 3603431.

In Year 3, ten days of flexibility would be added to the lower poverty pasture and 15 days of flexibility would be added to upper poverty pasture, due to potential snow conditions.

The grazing system prescribed for the Beulah Allotment is very complex and will require the utmost diligence on the part of the permittee(s) to successfully implement. The complexity of this system is a result of the combination of resource constraints and lack of flexibility available in the existing livestock grazing operations. This allotment exhibits indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within these allotments through the adaptive management process.

Implementation of the proposed grazing schedule, range improvement projects, transfer of 289 AUMs from operator # 3603154 to operator # 3603431 grazing permit, changing the class of livestock to 100 AUMs of sheep, and identifying areas of use within this allotment, would allow resource conditions to improve and make progress toward meeting Standards 2, 4 and 5 in Upper Poverty, Moonshine, Burnt, Scab, and Little Seeding Pastures. The proposed grazing system, along with restricted use dates, would make progress toward meeting Standard 5 in Jack Creek, Big Seeding, Bennett, Mud Spring, Creek, North Homestead, and McClellan Pastures.

Calf Creek Allotment

Transfer of 289 active AUMs from operator # 3603431 to operator # 3603154 would be reflected in their renewed 10-year grazing permits. Operator # 3603154 would have a grazing preference of 579 active AUMs in this allotment. No AUMs would be allocated to operator # 3603431 in the Calf Creek Allotment.

Nine spring sites and three reservoirs are proposed for redevelopment and their associated riparian areas would be fenced. Four reservoirs are proposed for abandonment and would be reclaimed to improve resource conditions. A north boundary fence is proposed for construction in the Cave Creek pasture as is a division fence near the public/private boundary in the Lower Calf Creek pasture. Western juniper treatment would occur on 12,840 acres within the allotment. Western juniper would be treated mechanically and with prescribed fire within aspen stands located within the allotment.

Below is the proposed grazing schedule for this allotment.

Table 24. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for the Calf Creek Allotment.

Allotment	Use Period	Number of Livestock	Active AUMs
Calf Creek Allotment – Operator # 3603430	3/15-3/31	100 Cattle	56
	4/1-7/15	280 Cattle	976
	7/16-9/1	100 Cattle	158
	10/1-12/1	278 Cattle	567
	4/01-4/30	36 Cattle	36
Calf Creek Allotment – Operator # 3603154	3/15-6/1	650 Sheep	338
	3/15-3/31	24 Cattle	13
	4/1-9/1	45 Cattle	228

Calf Creek Allotment

Pasture	Year 1 (2008)	Year 2 (2009)	Year 3 (2010)	Year 4 (2007 and 2011)
Stemler Basin	<i>3/26-5/1 (158AUM)</i>	4/1-6/1 (545AUM)	11/2-12/1 (274AUM) 4/1-4/25 (107AUM)	11/2-12/1 (274AUM) 4/16-6/1 (201AUM)
Dishrag	8/1-9/1, 10/1-12/1 (719AUM) <i>3/15-3/25, 5/15-6/1 (124AUM)</i>	6/2-9/1 (704AUM) <i>5/16-6/1 (73AUM)</i>	6/11-9/1 (603AUM) <i>3/15-3/31 (71AUM)</i>	4/1-6/1 (620AUM)
Cave Creek	5/1-6/1 (173AUM)	4/1-4/22 (117AUM)	5/21-6/10 (100AUM)	7/1-7/15 (140AUM)
Lake Ridge	6/1-8/1 (562AUM) <i>5/2-5/14 (56AUM)</i>	10/1-11/1 (293AUM) <i>4/26-5/15 (86AUM)</i>	4/1-5/20 (488AUM)	7/16-9/1 (233M) <i>3/15-4/15 (137AUM)</i>
Lower Calf Creek Private	3/15-3/31 (70AUM)	3/15-3/31 (70AUM)	3/15-3/31 (70AUM)	3/15-3/31 (70AUM)
Lower Calf Creek BLM	Rest	Rest	4/1-5/1 46AUM <i>5/21-6/1 (51AUM)</i>	6/1-6/14 (130AUM)
Upper Calf Creek	5/1-6/1 (166AUM)	<i>3/15-3/27 (57AUM)</i>	5/21-6/10 (124AUM)	6/15-7/1 (170AUM)
Chalk Camp	4/1-5/1 (331AUM)	11/2-12/1 (274AUM) <i>3/28-4/25 (124AUM)</i>	10/1-11/1 (293AUM) <i>4/26-5/20 (109AUM)</i>	10/1-11/1 (293AUM)
Grasshopper	FFR	FFR	FFR	FFR
Total AUMs	2,336	2,336	2,336	2,263

Italicized text indicates sheep use.

The grazing system prescribed for the Calf Creek Allotment is very complex and will require the diligence on the part of the permittee(s) to successfully implement. The complexity of this system is a result of the combination of resource constraints and lack of flexibility available in the existing livestock grazing operations. This allotment exhibits indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within these allotments through the adaptive management process.

The proposed grazing system and range improvement projects, along with incorporating decreased pasture use time and changing class of livestock from cattle to sheep, should improve both the uplands and riparian communities. Approximately 15% of the grazing preference would change from cattle to sheep. These proposed changes would allow resource conditions to improve and make progress toward meeting Standards 2, 3, 4 and 5 in the Upper Calf Creek Pasture; Standards 2, 4, and 5 in Dishrag, Lower Calf Creek, Lake Ridge and Chalk Camp Pastures; and Standard 5 in the Stemler Basin Pasture.

Castle Rock Allotment

Based on a change in ownership and ranch managers, the grazing permittee agreed to a voluntary reduction of 1,782 AUMs (approximately 600 AUMs per year) in this allotment for a period of 3 years beginning in 2006 and ending in 2008. After the 3-year period, the BLM and the grazing permittee would analyze the results of the grazing system and the non-use to determine if these measures are satisfactory or if additional changes need to be implemented.

Twenty-five spring sites are proposed for redevelopment, and their associated riparian areas would be fenced. Western juniper treatment would occur on 11,075 acres of the allotment. Western juniper would also be treated mechanically and with prescribed fire within aspen and mountain mahogany stands.

The proposed grazing schedule and the reduction in AUMs would provide progress toward meeting the S&Gs.

Below is the proposed grazing schedule for this allotment.

Table 25. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for the Castle Rock Allotment.

Allotment	Use Period	Number of Livestock	Active AUMs
Castle Rock Allotment	4/1 - 11/15	603	4,525 (1,800 in Voluntary non-use over 3 years)
	4/1-11/15	41	311
Pasture	Year 1	Year 2	Year 3
Castle Rock	Rest	4/1-6/30	10/1-10/31
Clevenger Butte #1	Rest	4/1-6/15	10/1-10/31
Clevenger Butte #2	4/1-6/30	7/1-8/31	Rest
Duck Pond	Rest	3/20-6/30	10/1-11/15
South Rockpile ¹	Rest	3/20-6/30	Rest
North Rockpile ¹	3/20-6/15	Rest	3/20-6/15
House	10/1-11/15	Rest	3/20-6/30
Poison Field	Rest	10/1-11/15	4/1-6/15
Heifer	4/1-6/30	10/1-10/30	Rest
Hat Butte	10/1-10/31	Rest	4/1-6/30
Sheep Rock	5/1-6/15	Rest	Rest
East Rockpile	3/20-5/31	Rest	3/20-5/31
Water Gulch FFR	Use will be light/rest in compliance w/ USFWS BO		
Goodwin FFR	FFR		
Little Malheur FFR			
Holdout FFR			

¹North Rockpile will be grazed on uneven years beginning in 2007 and South Rockpile will be grazed on even years beginning in 2008.

Implementation of the proposed grazing schedule, range improvement projects and voluntary non-use of approximately 1,782 AUMs (approximately 600 AUMs per year) which began in 2006 and is continued into 2007 and 2008 would allow resource conditions to improve and make progress toward meeting Standards 1,2,3,4, and 5 in Sheep Rock Pasture; Standards 2, 3, 4, and 5 in Castle Rock and Duck Pond Pastures; Standards 2, 4, and 5 in the Clevenger Butte #1& #2, Poison, Heifer, and Hat Butte Pastures.

DeArmond-Murphy Allotment

The grazing permittee has agreed to a 3-year reduction in use below grazing preference. In order to make progress toward meeting S&Gs 1,476 active AUMs were placed in voluntary non-use status for 2006, 1,579 active AUMs will be put in voluntary non-use status for 2007 and 2009, and 1,763 active AUMs will be put in voluntary non-use status for 2008.

The grazing permittee would be responsible for maintaining an additional 5 miles of new fence as a result of subdividing Castle Rock and Beulah Seeding Pastures. These projects are necessary due to S&Gs not being met for riparian in the Castle Rock Pasture and the uplands in Beulah Seeding Pasture. Beulah Seeding would be used in a rest rotation system. Lower Beulah Seeding was rested in 2006 and will be grazed every year from 3/15 to 4/20. Upper Beulah Seeding will be used every other year from 4/15 to 5/20.

Along with the proposed new fence in the pastures, there is an additional proposal to treat approximately 400 acres in the West pasture for noxious weeds through herbicide application and prescribed fire. Reconstruction of an old project, known as Wrinkle Fence (originally constructed in 1950) is also proposed under this alternative. Once completed, the project would be named Jerry Canyon fence. The new Jerry Canyon pasture would be grazed each year from 6/1-8/1 with a utilization level of 30% and should have adequate time for late summer/fall regrowth to occur in the riparian areas.

Western juniper would be treated on approximately 23,622 acres within the allotment. Western juniper would also be treated mechanically and with prescribed fire within aspen and mountain mahogany stands.

New FFR pastures have been identified to be added to this allotment due to incorporating previously unallocated BLM parcels and are shown in the proposed grazing schedule below.

Table 26. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for the DeArmond-Murphy Allotment.

Allotment	Use period	Number of Livestock	Active AUMs
DeArmond-Murphy Allotment	4/1-10/31	879	6,153
	11/1-11/30	350	350
Pasture			
	Year 1	Year 2	
Mahogany Mtn.	6/1-7/15	Rest	
Pole Gulch	4/1-5/31	Rest	
Castle Rock	7/15-10/31	7/15-10/31	
Jerry Canyon*	Rest	6/1-8/1	
Upper Beulah Seeding	Rest	4/15-5/25	
Lower Beulah Seeding	3/15-4/20	3/15-4/20	
Hunter Mountain	4/1-5/31	Rest	
Hunter Creek	Rest	4/1-5/31	
Morton	Rest	5/10-7/15	
Butler	Rest	5/10-7/15	
Murphy Reservoir	Rest	4/1-5/10	
West Bendire	Rest	4/1-5/10	
East Bendire	Rest	4/1-5/10	
West Munker	4/1-5/31	Rest	
North Munker	Rest	6/1-7/15	
South Munker	6/1-7/15	Rest	
Earp FFR	FFR		
Hayfield FFR			
South Earp FFR			
Middle Earp FFR			
Homestead FFR			
School Section FFR			

Pasture	Year 1	Year 2	
Emmigrant Hill FFR		FFR	
Agency Valley FFR			
Lost Creek FFR			
Upper Warm Spring Creek FFR			
Warm Spring Creek FFR			

*New Pasture.

Implementation of the proposed grazing schedule, range improvement projects, and a 4-year reduction in use by agreement (1,476 active AUMs in 2006; 1,579 active AUMs for 2007 and 2009; and 1,763 active AUMs for 2008) would allow resource conditions to improve and make progress toward meeting Standards 2, 4, and 5 in the Castle Rock, Hunter Creek, Hunter Mountain and Morton Pastures. The proposed fence construction in the Beulah Seeding Pasture and implementation of the new grazing schedule would meet Standards 3 and 5 within the Beulah Seeding Pasture.

Whitley Canyon Allotment

A well, pipeline, and troughs would be constructed in this alternative. This project would allow for improvement of upland and riparian communities in the Pete’s Mountain Pasture. Along with the proposed well, pipeline, and troughs in the Pete’s Mountain Pasture, there is an additional proposal to treat approximately 100 acres in the pasture for noxious weeds through herbicide application and prescribed fire. The permittee has agreed to take 276 AUMs annually of voluntary non-use for 3 years (2007, 2008, and 2009) in order to make progress in meeting the S&Gs.

The permittee would provide equipment, labor, and materials to reconstruct Pete’s Mountain and Lower Pete’s Mountain reservoirs in Pete’s Mountain pasture and Juniper Tree and Lower Juniper reservoirs in PJ#2 pastures. The reservoir reconstruction would facilitate improved livestock distribution, which will result in improved upland vegetation communities

Three spring sites are proposed for redevelopment and riparian areas would be fenced in the Burnt Mountain and Pete’s Mountain pastures. Western juniper treatment would occur on 12,086 acres of the allotment.

Below is the proposed grazing schedule for this allotment.

Table 27. Use Period, Livestock Number, Active AUMs, and Proposed Grazing Schedule for the Whitley Canyon Allotment.

Allotment	Use Period	Livestock Numbers	Active AUMs
Whitley Canyon #3601553 Monte & Lance Siddoway	6/1-10/29	107	468 (63 AUMs in voluntary non-use)
Whitley Canyon #3601545 Siegners Riverside Ranch LLC	4/1-6/30	337	1008
Whitley Canyon #3601545 Siegners Riverside Ranch LLC	8/07-10/31	295	621 (213 AUMs on voluntary non-use)
Whitley Canyon #3601545 Siegners Riverside Ranch LLC	4/1-4/31	3	3
Pasture	Year 1 (2007)	Year 2 (2008)	Year 3 (2009)
Burnt Mountain	9/15–10/31	4/1–6/30	9/15-10/31
Pete’s Mountain	Rest	10/1-10/31	4/1–6/30
West Juniper	4/1-5/30	9/15-10/31	9/15-10/31
Little Malheur ¹	6/1-9/30	7/1-9/30	7/1-9/30
PJ #2	9/15-10/31	9/15-10/31	4/1–6/30
PJ #1 FFR	FFR	FFR	FFR
River Pasture ²	Rest	5/1-5/31	Rest
Dogwood Pasture ²	Rest	5/1-5/31	Rest

¹Grazing use in Little Malheur pasture may be less than scheduled due to upland utilization limits of 40%.

² Grazing in these two pastures would be the same as N. Rockpile in the Castle Rock Allotment (depending on year grazing system is implemented, coordinate implementation of grazing sequence with previous use).
Italicized entries indicate pastures utilized by operator # 3601553.

Implementation of the proposed grazing schedule, annual voluntary non-use of approximately 276 AUMs, and the proposed range improvement projects in Pete's Mountain Pasture would allow progress to be made in meeting Standards 1, 2, 3, 4 and 5 in the pasture, and 2, 4, and 5 in the Dogwood and River Field pastures.

Custodial (C) Allotments

Alternative II would implement grazing adjustments or range improvement projects for those allotments determined to not meet S&Gs due to current livestock grazing. In some allotments, the adjustment would be coordinated with individual permittees by a livestock agreement, and the allotment would continue to be managed as custodial. Impacts on rangelands and grazing use in the other C allotments would be the same as in Alternative I, as discussed above. No changes in active or suspended AUMs would be made to the renewed term permits.

Three projects were completed under separate NEPA analysis within C allotments as a result of not meeting S&Gs. These projects included the reconstruction of two springs (one in Bridge Creek West Allotment and the other in Ring Butte Allotment) and an enclosure fence in Chukar Park Allotment.

Bridge Creek West Allotment

Within this allotment, Standards 2, 4, and 5 were not meeting due to livestock grazing. Under a separate NEPA analysis (CE-OR-030-04-28), a riparian enclosure and spring reconstruction were completed to eliminate the influence of grazing from the area not meeting standards. With these projects in place, S&Gs would be met in this allotment.

Butte Tree Allotment

Evaluation data indicated that Standards 3, 4, and 5 were not met in this allotment due to current livestock grazing. Standards have been addressed with the grazing permittee and recommended changes have been made within the current authorization. The pasture received rest in 2005 and, through a livestock use agreement, would receive livestock use every other year for 5 years. If monitoring shows that the maximum allowable utilization ("light," 21%-40%) is exceeded during the 5-year period this allotment would then be incorporated into the rotation of the Whitley Canyon Allotment. It is anticipated that the grazing use implemented as part of the agreement would result in progress toward meeting S&Gs, with minimal impact to the grazing operation. Rest periods would place a minor burden on the permittee's grazing operation, but would benefit the operation by providing increased availability of residual forage for livestock.

Cottonwood Creek Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 853 acres within the allotment.

Chukar Park Allotment

Within this allotment, a new enclosure fence was constructed under separate NEPA analysis (EA-OR-030-04-009) to eliminate unauthorized livestock on BLM land. As a result of this project, and to improve resource conditions, the Chukar North Pasture would be rested through a livestock agreement for three years (2006, 2007, and 2008) or until upland trends improve. This alternative would improve resource conditions more quickly than Alternative I, and provide progress toward meeting the S&Gs.

Ironside Mountain West Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 110 acres within the allotment.

Ironside Mountain East Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 1,094 acres within the allotment to benefit special status species and to move vegetative composition toward DRFCs and woodland objectives identified in the SEORMP ROD.

Kivett Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 241 acres within the allotment.

Lockhart Mountain Allotment

Under this alternative, livestock management practices (limiting hot season use) would be used to contribute toward riparian functionality and would become a term and condition on the renewed term permit. The limitation of hot season use within this pasture should allow for the recovery of riparian vegetation. This pasture would receive periodic monitoring to ensure the proper season of use is followed, and the riparian community is making progress toward meeting the S&Gs. Western juniper would be treated on 1,033 acres within the allotment to benefit special status species and move vegetative composition toward DRFCs and woodland objectives identified in the SEORMP ROD.

Malheur River Allotment

In this alternative, a new fence would be constructed to separate the upland pasture from the river corridor. The fence would be connected to the existing enclosure fence and allow for a new grazing system to be implemented by the operator within the riparian zone. The Little Malheur River Stream Enclosure would be renamed as the Upper Little Malheur River Riparian Pasture and it would be grazed every other even year for a maximum one week period in May with no more than 42 head of cattle (2008, 2012, 2014...). The Lower Little Malheur River Riparian Pastures will be grazed every other even year for a maximum one week period in May with no more than 42 head of cattle (2010, 2012, 2016...). The maximum allowable utilization limit for the Upper and Lower Little Malheur River Riparian Pastures within the Malheur River allotment will be “light” use (21%-40%) of key plant species. The maximum allowable utilization limit for woody riparian vegetation, specifically willow, is 30%. The minimum riparian herbaceous stubble height guide is 4 – 6 inches as long as riparian improvement is occurring. The Upper and Lower Little Malheur River Riparian Pastures will be required to maintain at least 80% of the bank as stable. The Upper and Lower Little Malheur River Riparian Pastures will be required to maintain at least 80% of the bank as stable. Two springs would be redeveloped and fenced to improve riparian areas within the allotment. These new projects would allow for progress toward meeting Standards 2, 3, 4, and 5. Western juniper would be treated on 624 acres within the allotment. No changes would occur in the Stanfield pasture.

South Willow Creek Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 1,028 acres within the allotment.

Squaw Butte Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 73 acres within the allotment.

Ring Butte Allotment

Impacts to rangelands and grazing use under this alternative would be the same as those described in Alternative I. Western juniper would be treated on 312 acres within the allotment. Under a separate NEPA analysis (CE-OR-030-04-29), a riparian enclosure was constructed to eliminate the influence of grazing from the areas not meeting standards.

SUMMARY

Under this alternative, livestock grazing use would be met in a manner consistent with S&Gs and SEORMP livestock grazing objectives.

5.5.3 Alternative III - Rangeland/Grazing Use

GENERAL IMPACTS

In 45 pastures within 11 allotments (see Table 28 below) where S&Gs were not being met because of current livestock grazing as assessed in the year 2000, livestock grazing would be suspended. The suspended use would be for a minimum of 3 years or until monitoring showed resource conditions were moving toward meeting the standards as defined in S&Gs and the SEORMP ROD rangeland grazing use objectives. Resumption of livestock grazing in those pastures would be permitted where there is a reasonable expectation that grazing could occur

without setbacks in recovery toward meeting S&Gs and rangeland grazing use objectives. Grazing schedules, forage utilization levels, and season of use in those pastures where grazing use is not suspended would be the same as the proposed action. In pastures available for grazing, schedules would be followed as prescribed in the proposed action.

Projects constructed with implementation of Alternative III would be similar to Alternative II with the exception of western juniper treatments as shown in Appendix D. The priority of implementing vegetation manipulation projects, e.g., prescribed fire in communities dominated by western juniper and seeding in cheatgrass range, would be unchanged to achieve S&Gs in vegetation communities dominated by woody or annual species. The priority of implementing structural rangeland projects, for example, pasture division fences and water developments in pastures that meet or are progressing toward meeting S&Gs, would also not differ from the Proposed Action (Alternative II), since many of these projects are proposed to accelerate progress toward meeting S&Gs or meeting management objectives. The priority of constructing projects in pastures where S&Gs are not met or substantial progress has not been made toward meeting the S&Gs would differ from the Proposed Action under this alternative in that these projects may not be necessary if progress toward meeting S&Gs has been attained through livestock exclusion. If project construction in pastures where livestock are temporarily excluded is needed, then these proposed projects would become a priority after the decision has been made to reintroduce livestock grazing.

Under this alternative, a direct loss of available AUMs from existing grazing authorizations would be imposed in those pastures not meeting the S&Gs. The table below shows temporary suspension of AUMs within affected allotments and pastures for the NFMGMA. Under this alternative grazing use would decrease by 15,017 AUMs. It is expected that some current grazing operations would not be viable under this alternative. Impacts to livestock permittees would depend on the rate of recovery of the vegetation communities within the pastures as they relate to meeting S&Gs and SEORMP objectives, and the amount of suspended AUMs. Reductions in grazing allocations are typically made by either changing the number of animals to be grazed, or the time available for grazing by allotment, or both.

If the number of animals is reduced, the impact of the loss would be spread over the entire grazing season. The impact felt by the affected grazing permittees would then be proportional to the severity of the reduction. However, if the reduction is made by cutting the time available to graze during a given year, then the relative impact on the operation would depend on the operation's ability to fill the time gap left in the grazing season. The cost of filling the gap would be relative to the cost of alternative forage (such as hay or leased pasture), the cost of transporting livestock to and from alternative sources of forage, and the costs associated with care and feeding under those specific circumstances.

The table below shows current AUMs, proposed suspended AUMs under this alternative, and proposed available AUMs by allotment and pasture.

Table 28. Allotments/Pastures Not Meeting S&Gs, Caused by Current Livestock Grazing Practices.

Allotment	Pasture	Acres	BLM Acres	AUMs	Suspended AUMs	3yr Suspended	Available AUMs
Agency Mountain	Agency Mountain	2,299	1,834	1,400	0	483	917
	Reservoir Field	786	107				
	Total	3,085	1,941				
Allotment 6	Juniper Gulch	7,252	6,666	1,540	339	1,201	0
Beulah Reservoir	Antelope	3,743	1,517	1,922	0	1,509	473
	Lower Poverty	717	703				
	Upper Poverty	1,138	1,080				
	Moonshine	1,049	1,000				
	Jack Creek	2,025	2,016				

Allotment	Pasture	Acres	BLM Acres	AUMs	Suspended AUMs	3yr Suspended	Available AUMs
	Burnt Field	309	309				
	Scab	919	648				
	Little Seeding	151	93				
	Bennett	386	386				
	Creek	1,126	270				
	North Homestead	2,146	1,348				
	McClellan	439	328				
	Total	14,148	9,698				
Butte Tree	Butte Tree	1,917	617	123	54	69	0
Calf Creek	Stemler Basin	4,173	4,140	2,370	0	2,367	3
	Dishrag	6,388	6,362				
	Cave Creek	551	545				
	Lake Ridge	3,980	3,672				
	Lower Calf Creek	1,678	809				
	Upper Calf Creek	829	741				
	Chalk Camp	2,247	2,210				
	Total	19,846	18,479				
Castle Rock	Castle Rock	4,131	3,940	4,816	0	3,433	1,383
	Clevenger Butte #1	1,515	1,505				
	Clevenger Butte #2	2,284	1,733				
	Duck Pond	1,691	1,451				
	House	2,281	1,154				
	Poison	1,424	1,387				
	Heifer	830	828				
	Hat Butte	3,126	2,115				
	Sheep Rock	1,813	1,500				
	Total	19,095	15,613				
Chukar Park	Chukar North	147	147	81	46	6	29
DeArmond Murphy	Castle Rock	10,578	9,821	6,503	0	4,017	2,486
	Beulah Seeding	1,697	1,531				
	Hunter Mountain	2,328	2,053				
	Hunter Creek	2,850	2,092				
	Morton	1,780	1,780				
	Earp FFR	2,477	1,202				
	School Section	835	435				

Allotment	Pasture	Acres	BLM Acres	AUMs	Suspended AUMs	3yr Suspended	Available AUMs
	Total	22,545	18,914				
Lockhart Mountain	Eastside	5,256	1,588	214	0	61	153
Malheur River	Malheur River	997	578	170	117	53	0
Whitley Canyon	Pete's Mountain	5,446	3,984	2,376	0	856	1,520
	Dogwood	684	390				
	River Field	723	410				
	Total	6,853	4,784				
	Total:	100,994	78,878	21,575	556	14,055	6,964
	All other Allot. & Past.	136,562	51,655	763	253		
	GMA total AUMs -	22,338					
	GMA Existing Suspended AUMs -	809		GMA Cumulative Suspended AUMs -			14,864
	GMA total acres -	237,556					
	Percent of Total AUMs Proposed for Suspension -	62.9%		Percent of Total AUMs Cumulative Suspension -			66.5%
	Total Acreage Proposed for Suspension -	100,994					
	Total Acreage Currently being Grazed -	237,413		Active AUMs Available During Suspension -			7,474
	Percent of Total Acreage Proposed for Suspension -	42.5%					
	Number of Operators Impacted by Proposed Suspension -	11					

ALLOTMENT-BY-ALLOTMENT IMPACTS

IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Agency Mountain Allotment

Under this alternative, grazing in this allotment would occur only in the FFR pastures, and livestock grazing would occur after seed ripe in Water Gulch Pasture with 197 head of livestock. Four hundred and eighty-three (483) AUMs would be suspended for a 3-year period. Western juniper would be treated on 86 acres within the allotment.

Allotment #6

Because S&Gs were not met in this allotment due to current livestock grazing, no grazing would occur for a 3-year period or longer if monitoring shows progress is not being made toward meeting the S&Gs. The livestock permittee would be adversely impacted during the non-use period as described above in the "General Impacts" section. One thousand two hundred and one (1,201) AUMs would be suspended for a 3-year period. No western juniper treatment would occur.

Beulah Allotment

Most pastures in this allotment failed to meet S&Gs and would receive rest for a 3-year period or longer if monitoring shows progress is not being made toward meeting the s. The livestock permittee would be adversely impacted during the non-use period as described above in the “General Impacts” section. One thousand five hundred and nine (1,509) AUMs would be suspended for a 3-year period. Western juniper would be treated on the same number of acres as shown under Alternative II. No western juniper treatment would occur.

Calf Creek Allotment

All pastures in this allotment failed to meet S&Gs and would receive rest for a 3-year period or longer if monitoring shows progress is not being made toward meeting S&Gs. The livestock permittee would be adversely impacted during the non-use period as described above in the “General Impacts” section. Two thousand three hundred and sixty-seven (2,367) AUMs would be suspended for a 3-year period. Western juniper would be treated on the same number of acres as shown under Alternative II. No western juniper treatment would occur.

Castle Rock Allotment

All pastures in this allotment failed to meet S&Gs due to current livestock grazing except for the Rockpile Pastures (North, South, and East). The Rockpile Pastures would be used as shown in Alternative II; however, the permittee would be adversely impacted during the non-use period in the remaining nine pastures that did not meet S&Gs. Three thousand four hundred and thirty-three (3,433) AUMs would be suspended for a 3-year period. Western juniper would be treated on 6,025 acres within this allotment.

DeArmond-Murphy Allotment

Six pastures did not meet S&Gs in this allotment due to current livestock grazing, and the grazing system outlined in Alternative II would be implemented in the remaining pastures. No grazing would be allowed in Castle Rock, Beulah Seeding, Hunter Mountain, Hunter Creek, Morton, and School Section Pastures for a 3-year period or longer if monitoring shows progress is not being made toward meeting S&Gs. The livestock permittee would be adversely impacted during the non-use period under this alternative as described above in the “General Impacts” section. Four thousand and seventeen (4,017) AUMs would be suspended for a 3-year period. Western juniper would be treated on 4,651 acres within this allotment.

Whitley Canyon Allotment

Three pastures did not meet S&Gs due to current livestock grazing. Grazing would be restricted to the Burnt Mountain Field, West Juniper, and Little Malheur Pastures and a reduction of 856 AUMs would occur under this alternative for a 3-year period or longer if monitoring shows progress is not being made toward meeting S&Gs. The livestock permittee would be adversely impacted during the non-use period under this alternative as described above in the “General Impacts” section. Eight hundred and fifty-six (856) AUMs would be suspended for a 3-year period. Western juniper would be treated on 1,800 acres within this allotment.

Custodial (C) Allotments

Grazing would be suspended for three years or longer based on monitoring in four C allotments (Butte Tree, Bridge Creek West, Chukar Park – North Pasture, and Malheur River Allotments), because S&Gs were not met due to current livestock grazing in those allotments. There would be 3,475 total acres of western juniper treated within the C allotments under this alternative.

SUMMARY

Under this alternative, the rangeland/grazing use objective would be met in a manner consistent with S&Gs and SEORMP livestock grazing objectives, but at a faster rate than in Alternative II.

5.6 Water Resources, Riparian/Wetland Areas, Soils and Biological Crusts

SEORMP ROD OBJECTIVE 1: Ensure that surface water and ground water influenced by BLM activities comply with or are making process toward achieving State of Oregon water quality standards for beneficial uses as established per stream by the DEQ.

SEORMP ROD OBJECTIVE 2: Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.

NFMGMA RIPARIAN OBJECTIVE 1: Maintain ecological function and health of vegetation communities. Increase streambank stability through increase of riparian species that provide a root matrix for holding soil particles together. Make progress toward >80% stable banks (same as INFISH Riparian Management Objective 1), and attain an upward trend in the following indicators:

- Stream meanders are increasing.
- Incised channels are healing with vegetation cover.

NFMGMA RIPARIAN OBJECTIVE 2: Decrease stream channel width/depth ratio (same as INFISH Riparian Management Objective 2), such that water depth is increasing and stream channel width is narrowing.

NFMGMA RIPARIAN OBJECTIVE 3: Increase streambank shade through the improvement of riparian/wetland areas that support desired shade-providing riparian herbaceous and woody species. Using increases in height and volume of streambank-shading canopy as a surrogate indicator of lower stream temperatures, stream temperatures in perennial reaches will have no measurable increase (same as INFISH Riparian Management Objective 3).

NFMGMA RIPARIAN OBJECTIVE 4: Increase abundance and diversity of desirable woody and herbaceous riparian vegetation by attaining upward trends in the following indicators (same as INFISH Riparian Management Objective 4):

- At sites with ecological potential for woody vegetation, increase the overall number, species diversity, and canopy volume (height and width) of key woody plants.
- At sites with ecological potential for woody vegetation, acquire healthy uneven-aged stands of key woody plants.
- Increase the overall surface area of herbaceous ground cover.
- Shift herbaceous species composition toward more late-succession species, such as Nebraska, slenderbeak, or water sedge, replacing more xeric-adapted species such as Baltic rush.

5.6.1 Alternative I - Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts

GENERAL IMPACTS

Livestock grazing impacts to uplands, stream channels and banks, and riparian/wetland areas identified through Rangeland Health assessments for Standard 1 (Watershed Function—Uplands), Standard 2 (Riparian), Standard 4 (Water Quality), and Standard 5 (Special Status Species) would continue in this alternative as shown in the Rangeland Health Determinations. Impaired riparian/wetland areas would continue to be impacted by livestock grazing systems.

Western juniper treatments would not be emphasized under this alternative, which may result in many acres of sagebrush/grassland continuing to be converted to western juniper woodlands. Numerous spring sources and riparian areas would be affected by the substantial water needs of an increasing number of mature western juniper (Miller et al 2005). Riparian vegetation would be diminished, as water would no longer be available to support herbaceous plant growth.

Forty-nine of the 77 spring developments in NFMGMA are located within wet meadows or are in need of redevelopment and trough relocation. All spring developments would be protected and redesigned on a case-by-case basis only.

Eight of the 77 reservoir developments would be abandoned, with removal of dams and surrounding areas rehabilitated. Short-term surface disturbance would occur from rehabilitation efforts, but the rehabilitated areas would provide long-term benefits to soil stabilization, vegetation cover, and riparian area functionality.

No new reservoirs (off-stream water sources) for livestock watering are proposed in any of the alternatives presented here. Development of reservoirs requires acquisition of permits and water rights from Oregon's Water Resource

Division. Water rights are increasingly difficult to obtain because of large demands for limited State-owned water and Oregon water laws that are more restrictive.

Under current management, 37 of 53 pastures with riparian areas do not meet Rangeland Health Standard 2, Standard 4, and Standard 5. Thirty-one of these pastures are not meeting standards due to current livestock use. The potential negative impacts of summer and fall season livestock grazing have been defined in BLM technical manual 1737-20, "Grazing Management Processes and Strategies for Riparian-Wetland Areas", and the SEORMP Appendix R, "Effects of Intensity and Season of Grazing." Stream channels, riparian/wetland areas, and aquatic habitat would not be expected to improve under the current rangeland/grazing use management outlined in this alternative. Surface disturbance to stream and riparian areas associated with current grazing management would not allow for protection or improvement of riparian areas. Impacts would include physical degradation of streambanks and wet areas, reduction of stream channel vegetation and shade cover, continuation of elevated water temperatures, decreased saturation of riparian/wetland areas, and reduced spring source discharge and channel flow. Continued degradation of these areas is inconsistent with S&Gs. Water resource and riparian/wetland area management objectives would not be met under this alternative and are inconsistent with S&Gs requirements.

ALLOTMENT-BY-ALLOTMENT IMPACTS IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Agency Mountain Allotment

The Agency Mountain and Reservoir Field Pastures were not meeting riparian standards due to current livestock grazing. Reservoir Field Pasture is administered by the Bureau of Reclamation (BOR) due to the predominance of BOR acres in the pasture. Riparian areas under this management would continue to degrade with hot season use. Agency Mountain Pasture would continue to be grazed on a spring grazing schedule with rest alternated with spring to early summer use in the pasture. However, given the early use only, shown on the actual use history for the pasture, it is unknown why the riparian vegetation is not in better condition.

Allotment #6

Assessments for rangeland standards and guidelines identified Red Willow Spring as not functioning properly, and current livestock use was a contributing factor. Since the assessments were conducted in 2000, there has been a change in ownership of this pasture. The new permittee has rested and used this pasture early, so continuation of the current schedule would not result in adverse impacts to the spring. Livestock use of the spring without properly designing and protecting it would continue to impact the spring source negatively.

Beulah Allotment

Scab, Burnt Field, Upper Poverty, and Moonshine Pastures were not meeting riparian standards due to current livestock grazing practices.

The seeps in the Scab Pasture would continue in their current trend and condition, although the remainder of the riparian areas are functioning properly under the current early season use schedule.

Burnt Field Pasture is not meeting riparian standards at one spring development. Without proper design and protection of the spring source, livestock would continue to impact riparian areas negatively.

Given the early use shown on the actual use history for the Upper Poverty and Moonshine Pastures, it is unknown why the riparian vegetation is not in better condition in these pastures. If the current grazing schedule is followed, riparian vegetation and areas should begin to improve.

Calf Creek Allotment

Prior to the year 2000 and assessment of upland standards and guidelines in this allotment, livestock grazing occurred frequently from midsummer to late fall. This livestock use resulted in the allotment not meeting S&Gs for riparian standards, because livestock concentrate for extended periods on the drainage bottoms and at the watering sites during the warm summer months, causing significant adverse impacts to riparian resources, including vegetation and water quality.

Since 2000, the grazing season was changed in this allotment, and either early season grazing (mid-March to late May) or late fall grazing (mid-October to late November) has occurred with 2 years of rest in pastures with riparian

resources. Problems associated with riparian grazing have consequently been addressed with the new grazing system. Livestock impacts have been greatly reduced in riparian areas during cool season use as livestock move out of the bottoms and do not concentrate at the watering sites. Some unauthorized hot season use has occurred in the riparian areas so diligence is required in clearing all livestock out of pastures and maintaining fences to keep livestock out of riparian resources during the hot season.

Should grazing revert to the schedules prior to 2000, adverse impacts to riparian resources would again occur. However, the current grazing season along with proper livestock management would maintain and improve riparian conditions within the allotment as long as livestock management is diligent in clearing pastures and maintaining fences.

Castle Rock Allotment

Riparian areas in Poison, Heifer, Hat Butte, Clevenger Butte #1, Clevenger Butte #2 Pastures, Sheep Rock, Duck Pond, and Castle Rock Pasture were not meeting Standard 2. Yearly livestock use during the hot season period would continue to contribute to a decline in riparian functionality.

DeArmond-Murphy Allotment

Under current management, AUMs used have been below authorized (permitted) use. It is anticipated that the current permittee would continue grazing at this approximate level of AUMs. Should management of this ranch operation and allotment change, to prevent negative impacts a new assessment of the grazing system would need to be completed, if the new permittee(s) intended to utilize full AUMs.

Riparian vegetation in Castle Rock and Morton Pastures would remain static or decline in condition due to summer and late season grazing which occurs yearly.

Hunter Mountain and Hunter Creek Pastures are not meeting riparian standards, specifically at spring developments. Without proper design and protection of the spring sources, livestock would continue to impact riparian areas negatively.

Whitley Canyon Allotment

Changes were made to the grazing in River Field and Dogwood Pastures over five years (2000 – 2005) due to concerns with riparian health and associated special status species management, primarily bull trout. Improvement in riparian resources in these pastures has been realized in this interim and would continue as the grazing schedule is maintained with either light spring use or rest.

Pete's Mountain Pasture would continue to be grazed on a spring grazing schedule with rest alternated with spring use in the pasture. However, given the early use only shown on the actual use history for the pasture, it is unknown why the riparian vegetation is not in better condition.

Burnt Mountain Pasture is not meeting riparian standards on two spring developments. Without proper design and protection of the spring sources, livestock would continue to impact riparian areas negatively.

SUMMARY FOR I AND M ALLOTMENTS

Under this alternative, riparian objectives under existing livestock grazing use would not be met in a manner consistent with S&Gs or SEORMP and NFMGMA riparian objectives.

SUMMARY FOR C ALLOTMENTS

Under this alternative, riparian objectives under existing livestock grazing use would not be met in a manner consistent with S&Gs or SEORMP and NFMGMA riparian objectives in Lockhart Mountain and Malheur River Allotments.

5.6.2 Alternative II - Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts

VEGETATION MANIPULATION IMPACTS

Potential impacts to riparian areas due to land treatment would vary somewhat according to treatment type as discussed below.

Vegetation manipulation proposed on three pastures would have short-term adverse effects on soils, water quality and quantity, and RCAs. Upland treatments aimed at enhancing forage production and increasing desirable herbaceous species would not be expected to alter existing watershed runoff and erosion characteristics (SEORMP FEIS Appendix S).

Prescribed fire, mechanical (brush-beating), or chemical methods may be used for land treatment. Prescribed fire could result in surface disturbance from subsequent wind erosion and raindrop impact and would affect existing biological soil crusts, which require many years to recover. Prescribed fire treatment is discussed at length below. Brush-beating creates large amounts of organic litter that reduces the influence on soils from wind and water erosion. It would have little effect on crust, but could produce some compaction and disturbance to soils due to equipment. Chemical spraying of vegetation would result in little or no soil compaction, disturbance to crusts, or increased runoff from uplands. However, there is little information on the effects of repeated application or long-term effects of herbicides such as glyphosate on crustal species. Therefore, caution should be used when applying these chemicals to remnant native areas supporting biological soil crust (Youtie et al. 1999). Chemical spray would defoliate sagebrush and other large shrubs that normally decrease raindrop impact to soil surfaces. Raindrop impact would cause only minor erosion of soils until herbaceous cover increased. Although shrubs would be defoliated, the standing woody material would aid in reducing snow scouring and potential wind erosion (SEORMP FEIS, Appendix S).

Prescribed fire as a land treatment would have a greater impact on area soils than either mechanical or chemical methods. Because NFMGMA receives a fair amount precipitation and there are naturally a limited amount of soil crusts, loss of soil crusts and microorganisms would be minimal. Frequent fires prevent the recovery of lichens and mosses, leaving only a few species of cyanobacteria. Damage to, and recovery of, biological crusts depend on the pre-fire composition and structure of the vascular plant community and on fuel distribution, fire intensity, and fire frequency (USDI BLM 2001). These impacts to soil resources are expected to be greatest the first year post-fire. Soil surface physical and biological characteristics should return to pre-fire conditions within three growing seasons, perhaps longer for some biological crusts. After prescribed fire, the loss of vegetation and litter from the surface horizon would subject the soils to enhanced wind and water erosion, depleting soil nutrients and affecting the reestablishment of biological crusts. However, potential for erosion would be short-term. Once vegetation is reestablished, wind and water erosion effects on soils, biological crust, and nutrients would be reduced. Erosion from water is likely to be less than wind erosion because of the relatively flat to rolling terrain that would receive rangeland drilling. Biological crusts not affected by prescribed fire treatments would be subject to short-term disturbance from drilling seed into the soil surface. Over the long-term, organisms within biological crusts are metabolically active only when wet; thus, recovery would be faster in these higher precipitation regions (Harper and Marble 1988, Johansen 1993). Crusts on north and east slopes, as well as at higher elevations, usually will recover more quickly than crusts on south and west slopes and at lower elevations. Revegetation failure in treatment sites after fire can result in irreversible dominance by annual species, such as cheatgrass, which prevents the return of well-developed biological soil crust (Kaltenecker 1997; Kaltenecker et al. 1999). If annual species increase, fire may reoccur at a quicker rate of return and re-burn some of the same sites. This rate of fire return would increase the potential for soil erosion, soil nutrient loss, and the effects to and loss of biological crust.

Prescribed fire would only be used where it (1) aids in restoring upland soil productivity, (2) invigorates shrub, forb, and grass components, and (3) enhances on-site vegetation growth (SEORMP FEIS, p. 464). To protect soil characteristics during prescribed fire applications, restrictions based on seasonal and moisture conditions would be incorporated into burn plans.

Some soil impacts would be expected during the drilling phase of any land treatment project. However, few adverse effects are expected because of minimal slopes. The impact of rangeland drilling equipment would loosen and

displace the top 22 to 33 inches of the soil within the furrows, which are usually twelve inches apart. This disturbance is temporary; however, furrows act as moisture traps and new plants would begin to stabilize soil within the first year following drilling. Wind and water erosion rates would decrease after seedling establishment.

Regardless of the vegetation treatment method used, over the short term, water quantity from precipitation events and overland flow would increase in treated areas, which may result in increased erosion and a temporary increase in sedimentation from high intensity summer storms. This sediment transport may impact water quality over the short term in drainages associated with these treatments. However, erosion caused by snowmelt and gentle rainfall would be limited. Erosion from treatment areas is not expected to be of consequence because physical indicators for erosion, such as flow patterns, rills, gullies, wind scour, and deposition of sediment and litter, were not observed on upland areas during the assessment of Rangeland Health Standard 1 (Draft EA Appendix C). Increased water yield from treated areas would occur for many years, but would diminish each year as herbaceous regrowth occurs. A shift in vegetation cover from sagebrush overstory to herbaceous species would reduce raindrop interception and decrease snowpack accumulations for 1 to 2 years following treatment. Areas that receive brushbeating treatment would retain some sagebrush canopy that would eventually regrow and lessen the effects of raindrop impact and snow scour.

Temporary fence may be used around vegetation manipulation areas to provide two growing seasons' rest in the treated areas. This ensures that adequate new root growth has been established and further mitigates any potential adverse effects to stream flow and water quality. Short-term soil compaction may occur around temporary fence lines from livestock trailing along the perimeter. Once the fence is removed, compacted trail areas and any effects to soils or vegetation should disperse. Any future temporary fence construction needed to protect new vegetation and root growth for short periods of time (1-3 years), such as during vegetation rehabilitation after wildfire, would have similar effects to the soil (SEORMP FEIS, Appendix S).

Improvement in treated areas would be contingent upon the degree of disturbance, revegetation success, and proper timing of livestock grazing use. Increased herbaceous cover and forage in open areas created by vegetation manipulation prescriptions could draw wildlife and livestock from streams and riparian/wetland areas. Reduced livestock concentrations along stream channels would increase abundance and diversity of riparian vegetation, increase channel stability, reduce sediment, and allow progress toward attaining Range Management Objectives.

Reducing western juniper cover would maintain or improve the soil resource function by insuring adequate moisture for the deeper-rooted shrubs and grasses. This allows for more water infiltration to occur, increasing the effective moisture of the site, and decreasing the runoff and erosion.

GENERAL PROJECT IMPACTS

Alternative II proposes development of rangeland projects to facilitate livestock grazing. Adverse effects to water quality and riparian/wetland areas from new rangeland projects in Riparian Conservation Areas (RCAs) would include short-term surface disturbances from construction of fences, water pipelines, spring developments, well developments (one in Allotment #6 and one in Whitley Canyon Allotment), and reconstruction/relocation of spring projects.

Forty-nine of the 77 spring developments in NFMGMA are located within wet meadows or are in need of redevelopment and trough relocation. Refer to the project list (Appendix D) for a list of all springs and their prioritization within the NFMGMA. All spring developments within wet meadows would be reconstructed and troughs relocated. Relocating troughs from riparian/wetland areas would lessen trampling and hoof shearing in moist areas around springs and meadows, allowing areas to rehydrate. These off-site water sources would benefit riparian/wetland areas, but areas around spring troughs would encounter adverse long-term impacts from concentrated livestock use. These impacts include compression of the soil profile, increased overland runoff, and heavier utilization of vegetation. As livestock migrate outward from these areas, impacts lessen and become negligible (SEORMP FEIS, p. 466). Overflow pipelines would be routed back to drainage channels. Routing the overflow to the channel would result in no net loss of water to each drainage system (USDI BLM 2001). Ground disturbances from spring project reconstruction would be the same as those described in Alternative I. Western juniper encroachment was a large problem identified in the springs in the GMA. Where appropriate, western juniper around the spring source and protection fencing would be removed during redevelopment. Western juniper removal

would also apply to the developed springs that are not scheduled to be redeveloped. Jackstrawing of western juniper would be used where appropriate to protect spring and riparian resources.

Eight of the 77 reservoir developments were identified to be abandoned. On five of the eight, this process includes removal of dams and rehabilitation of surrounding areas (Appendix D). Two of the reservoirs identified to be abandoned are pit reservoirs, meaning that pits were dug at the spring source. These reservoirs would be abandoned, but the spring sources would be developed on them. The protection measures listed above would then apply to these two sites. One of the reservoirs to be abandoned does not need reclamation measures as it has naturally reclaimed. No new reservoirs for livestock watering are proposed in any of the alternatives presented here. Development of reservoirs requires acquisition of permits and water rights from Oregon's Water Resource Division. Water rights are increasingly difficult to obtain because of large demands for limited State-owned water and Oregon water laws that are more restrictive. Impacts would be the same as those described in Alternative I.

There are 11 pit reservoirs in the GMA. Nine of these are identified to be treated similar to the spring developments where the water source would be fenced off and a trough will be placed out of the riparian area (Appendix D). Two of the pit reservoirs would be replaced with spring developments. Impacts would be similar to those associated with the spring redevelopments.

Ground disturbances from construction of these projects, including fences, wells, spring developments and pipelines, usually produce only short-term localized adverse impacts to soils and overland runoff when BMPs are applied and projects are developed properly (SEORMP FEIS, Appendix O and Appendix S). In addition, long-term, localized soil compaction and interception of overland runoff would be caused by concentrated livestock use around projects such as pipelines, troughs, and new pasture division fences (SEORMP FEIS, p. 480). Water quality and riparian/wetland areas would benefit from off-stream water sources that remove livestock from drainage channels and spring sources.

Adverse effects to biological crusts from proposed rangeland projects would occur where soils are disturbed for construction of pipelines, new fences, and relocation of spring troughs. Disturbance to crusts would occur only in linear areas that are necessary to complete projects.

Road access for construction and maintenance for new wells, pipelines, fences, and troughs in this alternative may result in increased short-term adverse effects to upland soils. The application of aquatic resource standards and BMPs (SEORMP FEIS Appendix O) for soil disturbance would reduce most road-related, short-term and long-term negative impacts within RCAs.

GENERAL LIVESTOCK MANAGEMENT IMPACTS

To improve riparian resources, grazing schedules, including timing and seasons-of-use, would be emphasized. Appropriate changes in livestock use and timing in pastures that contain RCAs in which water quality, PFC, and RMOs are impaired would allow for vegetation regrowth and recovery (SEORMP FEIS Appendix R).

To ensure that these proposed livestock grazing systems allow reproduction and improvement of woody riparian vegetation, a quantifiable key plant utilization standard based on the modified Cole Browse method (USDI BLM 1996) would be utilized in pastures containing riparian/wetland areas. This standard would be used to prevent excessive livestock browse on woody riparian vegetation. The permittee would be notified to remove livestock from any pasture if livestock concentration in riparian areas results in excessive use of woody vegetation. Excessive use is defined as when >30% of the available leaders have been nipped or detached from woody riparian plants. This estimate is based on the number of leaders that have been browsed and not on the percentage of growth removed. If livestock browse on woody riparian vegetation exceeds this level, cattle would be removed from the pasture.

Riparian herbaceous stubble height measurements are a second tool that would be used to monitor riparian areas. The objective of stubble height measurements is to determine the residual vegetation height of key species following a period of grazing. The measurements may be used in two ways in conjunction with other monitoring techniques (USDI BLM 2005) to determine when livestock should be moved from the riparian area, and at the end of the grazing season to determine whether changes to livestock grazing management are needed the following year. A guide, not a standard, of 4 to 6 inches of stubble height vegetation would be used to indicate that livestock may need to be moved to prevent damage to riparian vegetation or streambanks. If riparian areas are in good condition or are

continuing to improve in condition, this guide may be adequate to prevent riparian damage, but other areas may require more residual herbaceous vegetation to protect the streambanks and improve riparian area conditions. The goal of this guide is to provide an indicator to look at the other monitoring techniques to determine if the riparian area is moving in the desired direction.

Because almost 70 stream miles of impacted riparian/wetland vegetation would have new livestock grazing systems, long-term, beneficial, cumulative effects would occur to riparian/wetland areas and water resources at the watershed scale.

Proposed grazing systems would have some level of disturbance to biological crust, although disturbance would be less than existing conditions. Because biological crusts on fine-textured soils are less susceptible to disturbance when crust is dry (USDI 2001), livestock grazing in pastures during the summer and early fall would affect crusts less than grazing during late spring. Grazing during high moisture conditions in mid- to late-spring would have the greatest potential to disturb crust, although many pastures would be in a rest/rotation system that would allow some recovery from disturbance. Because biological crusts are less vulnerable to disturbance in all soil types when soils are frozen or snow covered (USDI 2001), crusts occurring in turn-out or winter pastures (December through February) would be the least affected by livestock grazing while these climatic conditions exist. Biological crusts in pastures with crested wheatgrass seedings would continue to receive disturbance from livestock grazing similar to historic rates.

ALLOTMENT-BY-ALLOTMENT IMPACTS IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Agency Mountain Allotment

Reservoir Field Pasture is administered by the Bureau of Reclamation due to the predominance of BOR acres in the pasture. Riparian areas under this management would continue to degrade with hot season use.

Agency Mountain Pasture would be divided. Division of this pasture would allow more rotation options in this allotment and allow for less duration of livestock grazing on riparian areas. The new North Agency and Agency Mountain Pastures would be grazed in a rotation that has one season of summer/fall use and one season of fall use in a six-season rotation. During the summer/fall season of use and the fall season of use, livestock numbers are low (refer to Section 5.5 Rangeland/Grazing Use) in the pastures. Adherence to this schedule would contribute to improving riparian conditions in both pastures due to fewer head of livestock, shorter duration grazing in pastures with riparian areas, and riparian vegetation monitoring.

Allotment #6

The proposed grazing schedule in this single pasture allotment (a small stream enclosure is not grazed) authorizes livestock grazing from October through March 1. Winter use would decrease most of the negative impacts associated with riparian area grazing because livestock would not be inclined to concentrate on riparian areas in the cool/cold seasons. There is the possibility of use of woody species during this grazing season, but with riparian areas predominantly in the cold air drainage pockets, the cattle would be more inclined to spend their days on the warm, south-facing hillsides.

This allotment is not well watered, so there is the possibility of livestock concentrations on Red Willow Spring during dry years. By completing the redesign and protection of the spring development, the riparian area would be allowed to recover.

The proposed well development would provide another source of water located in the uplands to draw livestock away from riparian areas. This would take grazing pressure off riparian areas during hot season use or droughty years.

Beulah Allotment

Grazing schedule changes in Lower Poverty, Upper Poverty, and Jack Creek Pastures would not negatively impact riparian areas, as there is only one hot season use for a short period every 4 years. Protection and redesign of the spring developments in these pastures will allow non-functioning riparian areas to begin recovering by removing livestock concentrations on the riparian areas.

Little Seeding has historically had early use. It is identified as a trailing pasture in this alternative. If late season trailing occurs, there is the potential to impact riparian areas negatively, but early season trailing should not.

The seeps not functioning properly in the Scab Pasture are not very large and are located along a fenceline. By continuing early season use in this pasture, the remainder of the riparian areas should continue to function properly. It is not understood why the seeps are not functioning and further evaluations may be needed to determine this peculiarity.

Moonshine Pasture is scheduled to be used in the spring under this alternative. Adherence to this schedule should allow for riparian recovery. There are elk present in this pasture in the fall, particularly concentrated around Moonshine Spring. Redesign and protection of this development should consider wildlife movements to allow for riparian recovery. This project is one of the highest priorities in the NFMGMA.

Burnt Field Pasture is scheduled for early season grazing use. Adherence to this schedule should allow for riparian recovery. Protection and redesign of the spring development in this pasture would allow the spring to improve its condition.

Calf Creek Allotment

Since 2000, the grazing season has changed in this allotment. Problems associated with riparian grazing have consequently been addressed with the new grazing system. Livestock impacts have been greatly reduced in riparian areas when livestock are well managed. This alternative also analyzes a proposal to change part of the cattle permit to sheep.

Proposed sheep use in any of the pastures would not negatively impact riparian areas unless sheep were allowed to bed or graze at length in a riparian area. Adhering to the schedule and conscientiously herding sheep would be beneficial to the riparian areas, stream functionality, and water resources, because use would be at appropriate times, sheep would graze outside of the riparian areas, and riparian vegetation would receive little impact from grazing.

The proposed 4-year rotation for Lower Calf Creek Pasture is early season use and rest, for Upper Calf Creek Pasture early season use, and for Cave Creek, Creek, three seasons early use and 1-year hot season use. With these seasons of use and proper livestock management, Alternative II would continue to allow improvements in the riparian areas in these pastures.

There are three seasons of late fall/winter use scheduled in Chalk Camp Pasture. Fall use can attract livestock to riparian areas if climatic conditions are not cold enough to prevent livestock from loafing in drainage bottoms. During the fall, riparian herbaceous and woody vegetation can be more palatable than cured upland grasses. The herbaceous and woody riparian vegetation utilizations would be closely monitored during fall use so the allowable use, as defined earlier in this document, would not be exceeded. Winter use would decrease most of the negative impacts associated with riparian area grazing because livestock would not be inclined to concentrate on riparian areas in the cool/cold seasons. There is the possibility of woody use during this grazing season, but with riparian areas predominantly in the cold air drainage pockets, livestock would be more inclined to graze on the uplands. Monitoring in these drainages would not allow greater than 30% browse. This schedule and active livestock management would allow riparian resources to continue to improve.

Dishrag Pasture has hot season use scheduled. Due to the large size and the amount of AUMs in this pasture, it is difficult to graze this pasture outside of the hot season. The springs in the pasture would improve in condition with redesign and protection of the development. Therefore, these spring projects are some of the highest priority in the NFMGMA. The stream areas in this pasture are concentrated on the north end of this pasture and are located within areas of heavy juniper encroachment. The riparian areas would be protected by jackstrawing junipers along the drainages to limit access to the streams.

Castle Rock Allotment

Most of the pastures with riparian areas in them are scheduled on a 3-year rotation consisting of 1 year rest, 1 year spring use, and 1 year fall use. The proposed schedule is an improvement over the existing situation where most of these pastures are used during the hot season.

Duck Pond, Castle Rock, Heifer, Hat Butte, and Clevenger Butte #1 Pastures all have approximately a 3 month spring use period, followed by a 4 to 6 week fall use period, and then a rest year. This scheduled use would be beneficial to riparian areas and would show improvement in the riparian trend. The riparian vegetation would have two growing seasons of rest and one season of use. Observations made in the Vale District have shown there is still substantial use on riparian areas with fall livestock use. Therefore, the fall use on both woody and herbaceous riparian vegetation in this proposal would have to be closely monitored to prevent riparian degradation.

Poison Pasture schedule is similar with a 6-week fall use period, followed by a 10-week spring use period, and is then followed by a year of rest. This pasture has very poor condition riparian areas, so the lengthy proposed fall use would be monitored to ensure riparian improvement.

Clevenger Butte #2 Pasture has a proposed schedule of a 3-month spring use period, followed by an 8-week summer use period, and is then followed by a year of rest. This proposal would contribute to riparian improvement during the spring and rest seasons. The proposed summer use would negatively impact the riparian areas unless livestock were removed before monitoring indicated the herbaceous and woody vegetation were exceeding allowable use.

Sheep Rock Pasture was identified as the largest concern in this allotment. The proposal for this pasture is one season of spring use and two seasons of rest. This schedule would allow for maximum riparian recovery. The season of use for this pasture may be changed in the future after the riparian areas have recovered enough to withstand more grazing pressure.

DeArmond-Murphy Allotment

Under current management, AUMs used have been below authorized (permitted) use. It is anticipated that the current permittees would continue grazing at this approximate level of AUMs.

Riparian vegetation in Morton Pasture would improve due to the spring use and rest periods scheduled in this proposal. Hunter Mountain and Hunter Creek Pastures would meet riparian standards with proper design and protection of the spring sources.

The spring developments in Castle Rock Pasture would also be properly designed and protected to allow the riparian areas in this pasture to recover with the hot season use proposed for this pasture. Therefore, these spring projects are some of the highest priorities in the NFMGMA.

Jerry Canyon in Castle Rock Pasture would be fenced into a new pasture. The new pasture created with Jerry Canyon in it would be grazed in a rotation including one year rest and one year spring/early summer use, which due to the topography, would allow riparian improvement and limit livestock use on the riparian areas.

Whitley Canyon Allotment

Changes were made to the grazing in River Field and Dogwood Pastures during five years (2000 – 2005) due to concerns with riparian health and associated special status species management, primarily bull trout. Improvement in riparian resources in these pastures has been realized in this interim and would continue as grazing is maintained with either light spring use or rest.

Pete's Mountain Pasture would continue to be grazed on an alternate spring use and rest schedule. However, given the early use shown on the actual use history for the pasture, it is unknown why the riparian vegetation is not in better condition under this grazing system. The proposed well development would provide another source of water located in the uplands to draw livestock away from riparian areas. This would take grazing pressure off of riparian areas during hot season use or droughty years.

Burnt Mountain Pasture is not meeting riparian standards on two spring developments. With proper design and protection of the spring sources, riparian areas would improve. There is only one season out of four with proposed hot season use in this pasture. This schedule would also contribute to riparian improvement.

SUMMARY FOR I, M AND C ALLOTMENTS

Livestock grazing schedules proposed for NFMGMA under Alternative II would improve riparian/wetland areas, and water quality and quantity, by providing a reduced period of livestock use during the critical growing period for riparian herbaceous and woody vegetation (SEORMP FEIS, Appendix R).

Soil and water resources and riparian/wetland area objectives would be met under Alternative II. Disturbance to biological crusts in Alternative II would be reduced compared to the existing condition.

5.6.3 Alternative III - Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts

VEGETATION MANIPULATION IMPACTS

Impacts from vegetation treatment projects would be the same as described in Alternative II.

Impacts from temporary fencing around the vegetation treatment areas would be the same as described in Alternative I.

GENERAL PROJECT IMPACTS

Impacts from proposed projects would be the same as described in Alternative II.

GENERAL LIVESTOCK MANAGEMENT IMPACTS

Implementation of Alternative III would result in accelerated improvement in riparian areas by giving those pastures not meeting Standards 2 and 4 due to livestock grazing a 3-year rest before beginning a grazing schedule. Rangeland grazing schedules proposed in this alternative would be similar to Alternative II, except emphasis would be placed on recovery and maintenance of woody and herbaceous riparian cover and the productivity of perennial upland vegetation. By providing a period of rest in riparian pastures not meeting the standards, over the short and long term, upland range management actions would have beneficial cumulative effects on uplands, stream channels, and RCAs. Following these schedules would allow an increase in desirable riparian vegetation, aiding in the stabilization of channels and banks and a reduction in erosion (SEORMP FEIS, Appendix R).

To ensure that these proposed livestock grazing systems allow reproduction and improvement of woody riparian vegetation, the same woody riparian vegetation standard described in Alternative II would be applied. The permittee would be notified to remove livestock from any pasture if livestock concentration in riparian areas results in excessive use of woody and herbaceous vegetation. Excessive use is defined as when >30 % of the available leaders have been nipped or detached from woody riparian plants. A riparian herbaceous stubble height of < 4 – 6 inches would trigger a closer look at the direction the riparian area is moving with respect to functionality.

At a watershed scale, because approximately 75 stream miles of impacted riparian/wetland vegetation would have 3 years of rest and new livestock grazing systems, long-term, beneficial cumulative effects would occur to riparian/wetland areas and water resources.

SUMMARY FOR I, M AND C ALLOTMENTS

Disturbance to biological crusts from livestock grazing would be similar but somewhat less than those disturbances described in Alternative II. Alternative III would provide additional periods of rest for high elevation pastures, a reduced number of rangeland projects, and reduced grazing use.

Soil, water resources, and riparian/wetland area objectives would be met under Alternative III. Disturbance to biological crusts in Alternative III would be less than in the existing condition.

5.7 Fire Regime, Fire Regime Condition Class and Fuels Management

SEORMP ROD OBJECTIVE 1: Provide an appropriate management response (AMR) on all wildfires, with emphasis on minimizing suppression costs, considering fire fighter and public safety, benefits, and values to be protected consistent with resource objectives.

SEORMP ROD OBJECTIVE 2: Recognize fire as a critical natural process and use it to protect, maintain, and enhance resources.

NFMGMA FIRE AND FUELS OBJECTIVE: Improve the FRCC within the NFMGMA, consistent with other resource objectives.

5.7.1 Alternative I - Fire and Fuels

The increase in western juniper would continue to increase fuels continuity across the project area. The condition class would continue to decline toward FRCC 3, indicating a large departure from historic conditions. Wildfires would burn with greater intensity due to the increased fuel loading and could potentially burn over larger areas because of the greater fuel continuity. Wildfires would also become more difficult to suppress because of the greater fuel loading. Firefighter and public safety would be at greater risk once fires are ignited. Fire suppression efforts would be restricted to primarily indirect attack strategies because of fuel loading and potential flame lengths. The use of mechanical equipment during suppression would also be increased because of the increase in large woody vegetation.

SUMMARY

An analysis of the appropriate management response (AMR) would take place on all wildfires. Fire would not be used to maintain and enhance resources. Hazardous fuels conditions would not be improved. The objective to improve FRCC within the NFMGMA would not be met.

5.7.2 Alternative II - Fire and Fuels

This alternative proposes the greatest amount of land treatments. In addition to improving rangeland health, these treatments are also anticipated to provide for improvement in FRCC. The proposed treatments primarily focus on western juniper control within mountain big sagebrush, riparian areas, mountain mahogany, and aspen stands. This alternative is anticipated to provide the greatest improvement in FRCC within the GMA.

SUMMARY

An AMR would take place on all wildfires. Fire would be used in some areas to maintain and improve resources. Hazardous fuels would be reduced and the objective to improve FRCC within the NFMGMA would be met, where treatments are allowed under this alternative. The objective to improve FRCC within the NFMGMA would not be met in the areas where no treatments will take place and resource conditions including FRCC are not meeting the desired range of future conditions (such as untreated conifer stands).

5.7.3 Alternative III - Fire and Fuels

This alternative proposes more land treatments than Alternative I, and less than Alternative II. The proposed treatments under this alternative primarily focus on western juniper control. In addition to improving rangeland health, these treatments are anticipated to provide an improvement in the FRCC within the GMA, although to a lesser degree than Alternative II.

SUMMARY

An AMR would take place on all wildfires. Fire would be used in some areas to maintain and improve resources. Hazardous fuels would be reduced and the objective to improve FRCC within the NFMGMA would be met where treatments are allowed under this alternative. The objective to improve FRCC within the NFMGMA would not be met in the areas where no treatments will take place and resource conditions including FRCC are not meeting the desired range of future conditions (such as untreated conifer stands).

5.8 Aquatic Species and Habitats

SEORMP ROD OBJECTIVE: Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of fishes and other aquatic organisms.

NFMGMA AQUATIC SPECIES AND HABITATS OBJECTIVE 1: Emphasize aquatic species of management importance in NFMGMA that are identified as the following: bull trout, redband trout, Columbia spotted frog, western toad, long toed salamander, common garter snake, and western pearlshell mussel.

NFMGMA AQUATIC SPECIES AND HABITATS OBJECTIVE 2: Because healthy and productive riparian areas are integral to functioning of aquatic habitats, manage stream and wetland habitats in accordance with NFMGMA Riparian Objectives 1 through 4.

5.8.1 Alternative I - Aquatic Species and Habitats

Due to current livestock management, 31 of 53 pastures with riparian areas do not meet Rangeland Health Standard 2 (Riparian), Standard 4 (Water Quality), and Standard 5 (Special Status Species). Because no actions are proposed to bring these pastures up to standards, aquatic habitat in general is not expected to improve under the livestock use management outlined in this alternative.

Surface disturbance to aquatic habitats would be associated with current livestock stocking rates and grazing management, which do not allow for protection or improvement of riparian areas. Impacts would include physical degradation of streambanks and wet areas, reduction of overhead cover, higher water temperatures, decreased habitat complexity, reduced discharge, and impairment of fish, amphibian, aquatic invertebrate, and garter snake populations.

Although some treatment for reduction of encroaching western juniper would occur, western juniper treatment would not be emphasized under this alternative, and sagebrush/grasslands may continue to be converted to western juniper woodlands. Because of significant water usage, encroaching western juniper could dewater springs and riparian areas where western juniper would not naturally occur. Conversely, because few rangeland vegetation treatments would occur, there would be few ground-disturbing negative impacts of these actions on aquatic or riparian areas.

Possible benefits from spring redevelopment and relocation of troughs outside of wet meadows would not occur. Livestock would continue to water in wet meadows, and riparian areas and spring habitats would be protected only on a case-by-case basis.

ALLOTMENT-BY-ALLOTMENT IMPACTS IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Specific concerns with special status aquatic species habitat exist for the following pastures under this alternative:

Agency Mountain Allotment

Reservoir Field Pasture is administered by BOR but lies adjacent to Beulah Reservoir, which provides winter habitat for bull trout. Under BOR's current management, riparian areas along a tributary to the North Fork Malheur River would continue to degrade. However, impacts to bull trout would be indirect, because the tributary is non-fishbearing.

Calf Creek Allotment

Special status redband trout and other native fishes inhabit Calf Creek within Lower and Upper Calf Creek pastures, but tributaries in adjacent pastures also influence stream habitat in Calf Creek. None of the riparian pastures in this allotment met riparian standards, but this was likely due to grazing management prior to 2000, when livestock grazing frequently occurred from midsummer to late fall. Because the current grazing system in this allotment involves early season grazing (mid-March to late May) or late fall grazing (mid-October to late November) with 2 years of rest, stream habitats have improved with increased growth of woody riparian vegetation and improved stream bank integrity. The current grazing system would maintain and improve riparian conditions within the allotment.

Castle Rock Allotment

Riparian areas in eight of 11 riparian pastures in this allotment did not meet Standard 2 due to livestock management. Yearly hot season grazing would continue to impact amphibians, reptiles, and invertebrates that inhabit springs, seeps, and intermittent drainages in these pastures.

Livestock grazing in Castle Rock pastures on the North Fork Malheur River (North Rockpile, Watergulch FFR) where bull trout occur is administered in agreement with USFWS and adheres to Terms and Conditions of the Biological Opinion for Grazing Activities on North Fork Malheur River Allotments (2001). Riparian standards were met in these pastures.

DeArmond-Murphy Allotment

Of 14 riparian pastures, six did not meet riparian standards due to livestock management.

Only a few streams in the allotment are fish-bearing. Rainbow trout occur in Bendire Creek, likely migrants from hatchery fish stocked in Murphy Reservoir. Special status Columbia spotted frogs and western toads occur in Bendire Creek and its tributaries. Because standards were met in pastures containing Bendire Creek, current grazing systems are not likely to impact these species. However, where current grazing impacts springs and seeps, such as in Hunter Mountain Pasture, amphibians, reptiles, and invertebrates that inhabit these habitats would continue to be negatively affected.

Whitley Canyon Allotment

Standards for riparian health were not met in River and Dogwood pastures, both of which contain bull trout, redband/rainbow trout, and Columbia spotted frog habitat, and along Kingsbury Gulch in Pete's Mountain Pasture, which also has populations of Columbia spotted frogs but which is non-fishbearing. In River and Dogwood Pastures, changes made to grazing since 1998, in consultation with USFWS concerning bull trout, have allowed significant riparian recovery to occur. Under this alternative, it would be expected that riparian conditions and instream habitat would continue to improve.

In Pete's Mountain Pasture, the grazing system would remain as spring use alternated with rest. Because habitat along Kingsbury Gulch shows current livestock impacts including bank trampling and heavy browse, inconsistent with this current schedule, additional data are needed as to causes. If implemented, the current grazing system should allow the riparian standard to be met.

Custodial (C) Allotments

The only C allotment with significant aquatic habitat not meeting standards is Malheur River, where livestock impacts occur along the Little Malheur River. It would be expected that riparian vegetation and bank integrity would continue to decline in Alternative I.

SUMMARY

Under this alternative, the majority of riparian pastures currently not in compliance with S&Gs would remain impaired. Some special status species, such as bull trout and redband/rainbow trout, would be protected because they inhabit streams in pastures that meet or are making progress toward meeting riparian standards. However, the amphibians (Columbia spotted frogs, western toads) would be negatively impacted by aquatic habitat conditions in Pete's Mountain Pasture, and in other riparian areas where potential habitat occurs but where their presence has not yet been documented.

The Aquatic Species and Habitats objective would not be met under Alternative I.

5.8.2 Alternative II - Aquatic Species and Habitats

VEGETATION TREATMENTS

In this alternative, emphasis on upland vegetation management would be greater than in Alternative I. Vegetation management designed to improve native plant communities and increase herbaceous forage may result in disturbances to aquatic habitats, but impacts are not likely to be direct. Short-term effects from prescribed fire, mechanical vegetation removal, or spraying may include increased erosion and sediment delivery to streams, but these effects would be minimized by leaving appropriately-sized riparian buffers between treated areas and wetlands or streams. Increased herbaceous cover and forage in open areas created by vegetation manipulation prescriptions could draw wildlife and livestock from streams and riparian/wetland areas, reducing grazing impacts along stream channels.

Treatment of western juniper encroachment in riparian areas would follow project design elements such that sediment inputs to streams and bank damage are avoided. At specific sites, removal of invasive western juniper would reduce transpiration losses and increase availability of water for riparian vegetation and storage, thereby providing long-term benefits to aquatic habitats. However, ground disturbances caused by vegetation treatment may allow weed species to invade native range and threaten riparian habitats with the spread of exotics.

The area of upland vegetation treatments (approximately 80,000 acres) in this alternative would be greater than acreage proposed in Alternative I, and consequently short-term negative impacts of ground disturbance or long-term beneficial effects to aquatic habitats would be greater in Alternative II.

GENERAL RANGELAND PROJECT IMPACTS

Structural range improvement projects such as fences have the potential for short-term negative effects on aquatic habitat through surface disturbance and the possibility of erosional inputs to streams or wetlands. Long-term negative effects could occur if livestock movement patterns parallel to the fence line create pathways denuded of vegetation and prone to ablation. Adverse impacts to aquatic habitats would be minimized or eliminated through imposition of adequate buffer distances and construction outside of RCAs. Fences would be constructed in xeric vegetation beyond the wetted perimeter of the wetland or stream, and would be sufficiently distant from water sources as to allow for expansion of riparian areas. Exclusion of livestock from wetland riparian areas around spring sources and a 0.5-mile enlargement of the Little Malheur River enclosure would promote rapid, long-term improvements to aquatic habitats. Woody plant communities would expand in extent and volume where site potential allows. Excluding livestock from wet areas and relocating troughs away from water sources would allow subsequent rehydration and expansion of wet meadows, directly benefiting amphibians, wandering garter snakes, and aquatic invertebrates. Rerouting the overflow back to the channel would result in no net loss of water to the drainage system. However, concentrated livestock use around the new trough sites would increase adverse long-term impacts such as soil compaction and loss of vegetation cover. Construction of division fences to manage a portion of a pasture for riparian values, such as Jerry Canyon in Castle Rock Pasture, would allow long-term improvements to aquatic habitats, but at a slower rate than complete livestock exclusion.

Construction of two proposed pipelines, one each in Pete's Mountain and Juniper Gulch Pastures, could negatively impact aquatic habitat by reducing the volume of natural flows available for wetlands and streams and thereby decreasing habitat area. However, these pipelines would be supplied with water from wells which, by tapping ground water, would potentially have less direct effect on surface springs and seeps.

Cumulative, short-term impacts may result from surface-disturbing management activities such as upland vegetation management, spring reconstruction, and fencing, but most of these impacts could be minimized or eliminated through mitigation, such as adequate buffers. Cumulative long-term negative impacts could result from dewatering by new pipelines, inadvertent invasion of weeds after vegetation treatments, and new livestock trails along riparian fencing. Long-term improvements in aquatic habitat under this alternative would occur at a faster rate than under Alternative I.

GRAZING MANAGEMENT

Aquatic habitats would generally be expected to improve under the rangeland/grazing use management outlined in Alternative II. Implementation of grazing season of use revisions, reduction in actual grazing use, stocking level adjustments, livestock exclusion, and rangeland project developments would maintain aquatic resource values while providing a sustained level of livestock use. Specifically, changing grazing schedules so that season of use is earlier in pastures with streams and wetlands would allow regrowth and maintenance of riparian vegetation, preventing excessive erosion and breakdown of streambanks.

Riparian vegetation communities would be less vulnerable to negative impacts from livestock during this earlier season of use for a number of reasons. Spring grazing normally results in better livestock distribution between riparian and upland areas due to flooding of riparian areas and presence of highly palatable forage on the uplands. In addition, cooler seasonal temperatures would allow livestock to forage farther from water sources. Opportunities for regrowth of herbaceous species would be present through the remainder of the growing season, providing adequate plant cover to protect banks and floodplains from the hydraulic energy of high spring flows. Most willow species do not initiate palatable foliage growth until late spring, resulting in less willow browse than at other seasons of the year. However, heavy livestock use on wet, finer textured soils in riparian areas with steep gradients may cause soil compaction, streambank hoof shearing, or increased erosion rates.

In riparian pastures that would receive periodic hot season use or fall use, such as five pastures in Calf Creek Allotment and several Castle Rock Allotment pastures, improvements to riparian areas would be slower than under early season use or rest. Specifically in Lower and Upper Calf Creek pastures, impacts to aquatic habitats would be

greater in this alternative than under Alternative I, where early-season and rest are scheduled. Monitoring riparian areas in pastures proposed for hot season or fall grazing would be critical to ensure that the grazing systems allow recruitment and improvement of woody riparian vegetation and adequate protective herbaceous cover (see Section 5.6.2 “Alternative II -- Water Resources, Riparian/Wetland Areas, Soils, and Biological Crusts” for monitoring protocols). Limiting woody browse by livestock and leaving adequate residual herbaceous stubble along stream banks would contribute to riparian integrity and health of aquatic habitats. Monitoring would also serve as a safeguard if new grazing systems produce unanticipated results.

ALLOTMENT-BY-ALLOTMENT IMPACTS

IMPROVE (I) AND MAINTAIN (M) ALLOTMENTS

Bull Trout

Livestock management in pastures that directly influence bull trout habitat would remain consistent with Terms and Conditions of the 2000 Biological Opinion with USFWS, and would continue to comply with Section 7 consultation. These pastures are River Field and Dogwood (Whitley Canyon Allotment) and North Rockpile and Watergulch FFR (Castle Rock Allotment); all receive light spring use and/or rest.

Redband/Rainbow Trout

These trout share the North Fork Malheur River habitat with bull trout, and thereby benefit from the livestock management in those pastures. Early-season grazing and rest proposed for East and West Bendire pastures and Murphy Reservoir Pasture would enhance or maintain productive aquatic habitat conditions for the (likely) hatchery-derived rainbow trout and other fishes in Bendire Creek and Murphy Reservoir. In Calf Creek Allotment, where redband/rainbow trout and other fish species occur, impacts to aquatic habitats would be greater than those in Alternative I, where proposed grazing for Upper and Lower Calf Creek pastures includes periodic hot season use and no rest. Degradation of riparian areas and aquatic habitats may occur along Calf Creek in Alternative II without conscientious monitoring and timely livestock moves.

Columbia Spotted Frogs

Proposed grazing systems, spring rehabilitation, and fencing projects for pastures with known Columbia spotted frog habitat (Hunter Mountain, East and West Bendire, Malheur River Allotment, Pete’s Mountain) would be compatible with restoration and improvement of aquatic and riparian sites. Spotted frogs share the North Fork Malheur River habitat with bull trout, and thereby benefit from the ongoing livestock management in those pastures. Known western toad habitat overlaps with that of the Columbia spotted frog and impacts of proposed management on toads would be similar to the above.

Custodial (C) Allotments

In Alternative II, extension of an existing enclosure fence along Little Malheur River would protect aquatic habitats for redband trout and Columbia spotted frogs, and riparian vegetation and bank integrity would be rapidly restored.

SUMMARY

The area of upland vegetation treatments in this alternative would be greater than acreage proposed in Alternative I, and consequently negative impacts of ground disturbance or long-term beneficial effects to aquatic habitats would be greater in Alternative II.

Because almost 70 stream miles of impacted riparian/wetland vegetation would have new livestock grazing systems designed to improve riparian areas, at a watershed scale, long-term beneficial cumulative effects would occur to riparian/wetland areas and water resources and these benefits would be greater than under Alternative I. However, in specific pastures, proposed grazing systems would have greater negative impacts to riparian habitat than under Alternative I. Where the proposed livestock grazing schedules involve early-season use and/or rest, quality of riparian and aquatic habitats would improve rapidly. Where proposed livestock grazing schedules include hot season, fall use, or lack of rest, improvement of riparian and aquatic habitats would occur at a slower rate and would rely on conscientious monitoring for successful implementation.

The Aquatic Species and Habitats objective would be met under Alternative II.

5.8.3 Alternative III - Aquatic Species and Habitats

VEGETATION TREATMENTS

Effects of vegetation treatment procedures would be the same as described in Alternative II, but overall, both the negative and beneficial impacts of western juniper removal would be less than in Alternative II since only 16,000 acres of western juniper would be treated.

GENERAL PROJECT IMPACTS

Impacts from proposed projects would be the same as Alternative II.

GRAZING MANAGEMENT

Implementation of Alternative III would give those pastures not meeting Standards 2 and 4 due to livestock grazing, a 3-year rest before beginning a grazing schedule. This rest period would accelerate recovery of woody and herbaceous vegetation and allow spread and growth of young plants, aiding in the stabilization of channels and banks and a reduction in erosion. Grazing schedules proposed in this alternative would be similar to Alternative II, but by providing a period of rest in riparian pastures not meeting the standards, Alternative III would allow more rapid riparian restoration and have greater beneficial cumulative effects on uplands, stream channels, and RCAs than under Alternative II.

SUMMARY

Because approximately 75 stream miles of impacted riparian and aquatic habitats would have 3 years of rest and new livestock grazing systems, long-term, beneficial cumulative effects would occur and at a faster rate than under Alternative II. However, adverse effects of western juniper encroachment into riparian areas would occur over a wider area than under Alternative II.

Where the proposed livestock grazing schedules involve early-season use and/or rest, quality of riparian and aquatic habitats would improve rapidly. Where proposed livestock grazing schedules include hot season, fall use, or lack of rest, improvement of riparian and aquatic habitats would occur at a slower rate, and would rely on conscientious monitoring for successful implementation.

The Aquatic Species and Habitats objective would be met under Alternative III.

5.9 Wildlife and Wildlife Habitats; Special Status Terrestrial Species

SEORMP ROD OBJECTIVE 1: Maintain, restore, or enhance riparian areas and wetlands so they provide diverse and healthy habitat conditions for wildlife.

SEORMP ROD OBJECTIVE 2: Manage upland habitats in forest, woodland, and rangeland vegetation types so that the forage, water, cover, structure, and security necessary for wildlife are available on the public land.

SPECIAL STATUS ANIMAL SPECIES SEORMP ROD OBJECTIVE 1: 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.

NFMGMA TERRESTRIAL WILDLIFE OBJECTIVE 1: Terrestrial species of management importance in NFMGMA are identified as the following: Brewer's sparrow, horned lark, western meadowlark, black-throated sparrow, sage sparrow, loggerhead shrike, greater sage-grouse, sage thrasher, northern bald eagle, northern goshawk, pileated woodpecker, white-headed woodpecker, pine grosbeak, pygmy rabbit, pronghorn, mule deer, and northern sagebrush lizard.

Maintain a high level of connectivity for sagebrush shrub cover among the pastures and grazing allotments of NFMGMA over the next 20 years as described below. Provide herbaceous plant cover in sagebrush upland

communities that will supply the necessary forage, cover, and structure needed to sustain terrestrial wildlife communities.

Adaptive management involving BLM land treatments and wildfire suppression will incorporate wildlife habitat needs at multiple-scales (fine and site scale) in order to limit sagebrush community fragmentation.

- Maintain 75% or more of NFMGMA Wyoming, mountain, and basin big sagebrush communities as shrub cover Class 3, 4, and 5 habitats as indicated in the SEORMP Appendix F, “Wildlife Habitat Descriptions and Considerations.” This objective includes both native and modified rangelands. The structural class objective is met in the sagebrush habitat types where sagebrush canopy cover ranges from approximately 10% to 35% (measured by line intercept), and shrub plants are in a predominantly middle to late structural condition.
- Allow for no more than approximately 20,900 acres (20%) of NFMGMA Wyoming, mountain, or basin big sagebrush range sites to exhibit grassland conditions as a result of BLM-initiated land treatments at any given time. Big sagebrush range site habitats occupy an estimated 104,500 acres within NFMGMA.
- Where necessary, allow land treatments in native rangeland as long as the combined amount of disturbance resulting in grassland conditions does not exceed 30% to 40% of any NFMGMA pasture unit.
- Minimize the geographic extent of grassland habitats that occur in large blocks (320 acres or more).
- In seeded areas, maintain 40% or more shrubland cover conditions favorable for sagebrush- dependent terrestrial wildlife. The structural class objective in shrublands is met where sagebrush canopy cover ranges from 10% to 35% and is in a predominantly middle to late structural condition.
- To the extent that it is possible, manage wildfire so that disturbance to rangeland does not exceed 5% of NFMGMA Wyoming and basin big sagebrush habitats over the next 20 years. Appropriate management responses to wildfire should be planned on an annual basis. Appropriate fire management response planning for NFMGMA will promote and complement the attainment of NFMGMA sagebrush habitat management objectives.
- Maintain herbaceous plant cover consistent with mid, late, and Potential Natural Community ecological status in big sagebrush and low sagebrush habitats. Desirable herbaceous plant communities for wildlife are comprised of native perennial grasses and multiple species of native forbs consistent with site potential as determined by Natural Resource Conservation Service (NRCS) site guides.
- Manage grazing use impacts on native rangeland so that utilization levels are predominantly slight (6-20%) or light (21-40%) at reasonable distances from livestock water sources and salting areas.

The quality, distribution, and amount of shrubland habitat described in this activity plan objective can be expected to support the life history requirements of NFMGMA Terrestrial Wildlife Species of Management Importance and substantially conserve ICBEMP Terrestrial Source Habitat values. The combined environmental impacts of disturbance from BLM initiated land treatments and wildfire over the next 20 years are addressed in this objective. Based on assessment findings, the objective assumes that 5% or less of NFMGMA may be affected by wildfire disturbance over the next 20 years.

NFMGMA TERRESTRIAL WILDLIFE OBJECTIVE 2: Provide quality riparian habitat for terrestrial wildlife, consistent with site potential and capability.

- Manage grazing use over the long term so that woody riparian plant species show signs of successful reproduction as evidenced by the presence of multiple-age class willow and aspen.
- Manage grazing use so that quality herbaceous plant cover is available for terrestrial wildlife communities.

NFMGMA TERRESTRIAL WILDLIFE OBJECTIVE 3: Management of Temporary Non-renewable (TNR) livestock grazing use authorizations.

- Allow for periodic fall TNR grazing use authorizations in crested wheatgrass or other exotic perennial grass seedings. Livestock utilization on fall green-up is allowed and will protect wildlife values as long as it does not exceed 40% by key forage plant method estimates.
- In NFMGMA native rangelands, protect herbaceous forage, cover, and structure values important to terrestrial wildlife by denying requests for TNR grazing.

5.9.1 Alternative I - Wildlife and Wildlife Habitats; Special Status Animal Species

GENERAL IMPACTS

BLM-authorized actions would continue to have no effect on northern bald eagle winter use due to the abundant roosting features located within the area (western juniper, cliffs, and cottonwood trees). BLM-authorized actions would also continue to have no effect on wolf or lynx due to the lack of resident animals and suitable habitat in the planning area. Therefore, BLM actions would conform to the Special Status Species objective of the SEORMP and consultation with the USFWS regarding northern bald eagles, wolves, lynx, and Section 7 of the ESA would not be necessary.

Existing conditions of shrub canopy structure would continue to influence habitat values important for meeting the life history needs of most terrestrial wildlife of management importance as follows:

- Native and exotic invasive grassland extent may expand but only due to sporadic wildfire occurrence.
- Western juniper occurrence would increase within the area, with subsequent decreases in sagebrush and herbaceous cover throughout the planning area. Western juniper currently impacts 66.5% (69,544 acres) of big sagebrush habitat within NFMGMA.
- Historically treated areas seeded with crested wheatgrass would be limited to Beulah Seeding (DeArmond-Murphy Allotment), Little Seeding, and Big Seeding (Beulah Reservoir Allotment).
- Total acres of crested wheatgrass habitat would not change, except as a result of wildfire rehabilitation, consistent with the SEORMP.
- The total amount of Wyoming, mountain, and basin big sagebrush rangeland converted to grassland from past wildfire, western juniper encroachment, and historic BLM land treatments would remain at about 13,549 acres (13%). The cumulative impacts of historic land treatments, western juniper encroachment, and wildfire would therefore meet NFMGMA Terrestrial Wildlife Objective 1, which is to manage grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a 25% threshold in big sagebrush rangeland.
- Existing land treatment impacts would meet SEORMP ROD objectives and NFMGMA objectives for Special Status Animal Species and upland habitats due to maintenance and recruitment of sagebrush.
- More than 87% of NFMGMA big sagebrush habitats would continue to sustain complex sagebrush uplands capable of supporting sage-sage grouse and other species that use sagebrush habitats.

NFMGMA grazing allotments would continue to tend away from the DRFCs as western juniper encroaches into shrub-steppe habitats. Where herbaceous understory conditions are relatively weak, western juniper expansion would compound the problem, and provide the opportunity for increased annual grass and weed establishment.

Based on fire history over the last 30 years, NFMGMA wildlife habitat would not be vulnerable to large or repeated wildfire disturbance, but at lower elevations and within conifer stands, fire frequency could increase. This increase would be most pronounced in the lower elevation areas due to the presence and expansion of cheatgrass and medusahead, landscape characteristics, and weather patterns.

A very slight increase in fence-related conflicts with wildlife would occur due to new enclosure fencing.

Over the long term, sagebrush re-colonization would continue to progress in Little Seeding, Big Seeding, Scab, Water Gulch, Agency Mountain, House, and Beulah Seeding pastures, thus providing complex shrubland communities at middle to late maturity in formerly treated (chemically sprayed or seeded) areas. Wildlife habitat values in crested wheatgrass / shrubland habitats, as described in the Affected Environment, would be provided.

The combined influences of ongoing domestic livestock grazing (including trailing) and existing facilities (fences, pipelines, water troughs, spring developments, reservoirs, and enclosures) would continue to limit forage and cover values for wildlife within local areas around water sources and certain upland locations that sustain concentrated livestock use. Given the relatively limited amount of upland habitat currently affected by concentrated grazing use, wildlife forage, cover, and structure values for a large portion of NFMGMA would continue to be maintained.

Adverse grazing impacts to wildlife forage and cover qualities would be most pronounced during low precipitation periods that inevitably occur in eastern Oregon. Impacts would be most pronounced to wildlife within the upland

and riparian sites not meeting the S&Gs Standard 5 (wildlife habitats and locally important species) due to current livestock grazing, as assessed in the year 2000.

Current management would generally be expected to continue to maintain adequate forage quality and quantity necessary to support ODFW big game management objectives or benchmarks for elk, mule deer and pronghorn. Big game species are highly mobile and generally able to adapt to the scattered, localized grazing use impacts that occur under existing authorizations. However, the loss of winter browse (such as antelope bitterbrush) in areas of western juniper encroachment would negatively affect resident and wintering elk and mule deer.

Grazing and/or trailing in pastures before the onset of sage grouse nesting activity (March through April) may result in diminished opportunities for nesting success because of reduction in herbaceous plant cover important for nest concealment, and physical disturbances caused by cattle.

Riparian habitat quality, composition, and distribution would continue to be adversely impacted by livestock grazing where annual summer and fall grazing use is occurring. Isolated spring sources accessible to livestock would continue to be denuded and heavily trampled by summer and fall livestock grazing. Big game impacts on riparian/wetland quality would continue to contribute toward limitations in riparian function, but their effects would also continue to be dwarfed in comparison to the intensity, duration, and overall impacts of domestic cattle and sheep grazing.

Herbaceous forage quality and volume available for wildlife during the summer and fall would continue to be limited in all wet meadows receiving summer and fall livestock grazing use. Woody plant canopy cover and recruitment for species such as willow and aspen would continue to be suppressed in many localized areas due to concentrated summer livestock grazing. Most lower-elevation woody riparian plants accessible to livestock are heavily browsed by cattle during the summer growth period so that mature plants are often damaged and recruitment of new plants is suppressed. Under current management, herbaceous plant re-growth does not occur, mainly because of cattle grazing use, and riparian habitat function provided by grasses, sedges, and forbs is impaired. This impairment of riparian function is contrary to the management objective for riparian/wetland wildlife habitats analyzed in the SEORMP ROD and FEIS. Alternative I would therefore not meet the wildlife objective for riparian habitats.

Alternative I would be inconsistent with Western Association of Fish and Wildlife Agencies (WAFWA) management guidelines for grazing use in sage grouse nesting and brood rearing habitat, as well as with the Oregon/Washington BLM management guidelines for sage grouse habitat because of ongoing riparian habitat and western juniper encroachment problems described in the Affected Environment and S&Gs.

Even though livestock grazing can substantially influence wildlife habitat quality and play a significant role in wildlife productivity, it is not the only limiting factor. In the absence of livestock grazing use, other factors such as disease, drought, insect attacks on vegetation, weather, accidents, predation, wildfire, habitat loss in other countries or states (e.g., impacts to neotropical migratory birds), and natural population cycles, influence wildlife communities in NFMGMA and elsewhere (SEORMP FEIS , Chapter 2, page 68).

There are no wildlife habitat improvement projects such as big game guzzlers proposed within NFMGMA. Opportunities for potential beneficial effects to wildlife would not exist.

Alternative I would continue to maintain a relatively moderate level of upland habitat quality and quantity in Castle Rock ACEC, in which wildlife is a relevant and important value. Special Feature wildlife dependent on upland habitat quality would continue to be provided forage and other habitat values required, but at an increasingly lesser level over time. Habitat for species of management importance associated with riparian areas, sagebrush steppe, forests, mountain shrub, and aspen communities in the ACEC would continue to be adversely impacted due to western juniper encroachment, overabundance of downed woody debris in conifer stands, livestock grazing, and a lack of recruitment of aspen and mountain shrubs.

SUMMARY

Alternative I would not be expected to meet most of the habitat elements addressed in the Wildlife and Wildlife Habitat SEORMP ROD Objective 2 (Upland Habitat). NFMGMA activity plan objectives tiered to the ROD objective would also not be met.

Alternative I would fail to meet most of the habitat elements addressed in Wildlife and Wildlife Habitat SEORMP ROD Objective 1 (Riparian Habitat), and Special Status Animal Species SEORMP ROD Objective 1 (Special Status Species). NFMGMA activity plan objectives tiered to these ROD objectives would also not be met.

5.9.2 Alternative II - Wildlife and Wildlife Habitats; Special Status Animal Species

GENERAL IMPACTS

BLM authorized actions would continue to have no effect on northern bald eagle winter use, wolves, or lynx for reasons already described in the Alternative I analysis. Therefore, BLM actions would conform to the Special Status Species objective of the SEORMP, and consultation with the USFWS regarding northern bald eagles, wolves, lynx, and Section 7 of the ESA would not be necessary.

As a result of proposed management actions in Alternative II, habitat values important for meeting the life history needs of most NFMGMA terrestrial wildlife of management importance would be adversely affected by land treatments in the short term, due to temporary removal of shrub overstory canopy structure. These impacts would be:

- Some additional increases in grassland extent may result from wildfire occurrence.
- Total NFMGMA acres planted with crested wheatgrass would not change.
- The total amount of Wyoming, mountain, and basin big sagebrush rangeland converted to grassland from wildfire, historic treatments, western juniper encroachment, and proposed BLM land treatment would minimally increase from about 13% (13,549 acres) to about 19.7% (13,549 existing acres + 7,081 proposed acres for a total of 20,630 acres). The cumulative impacts would therefore meet NFMGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD Appendix F) at or below a 25% threshold.
- The total amount of Wyoming, mountain, and basin big sagebrush rangeland converted to grassland from historic and proposed BLM land treatments (not including past wildfires) would increase from about 0.4% (400 acres) to about 7.8% (400 existing acres + 7,081 proposed acres for a total of 7,481 acres). The cumulative impacts of land treatment would meet the NFMGMA Terrestrial Wildlife Objective 1 which is to limit grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) resulting from BLM actions alone, to a level at or below a 20% threshold in big sagebrush rangeland sites (see Section 4.14, "Affected Environment" for benefits).
- More than 80.3% (83,860 acres) of NFMGMA big sagebrush habitats would continue to be, or become capable of supporting sage-sage grouse and other species that use sagebrush habitats.

Based on fire history over the last 30 years, NFMGMA wildlife habitat would not be vulnerable to large or repeated wildfire disturbance, but at lower elevations and within conifer stands, fire frequency could increase. This increase would be most pronounced in the lower elevation areas due to the presence and expansion of cheatgrass and medusahead, landscape characteristics, and weather patterns.

Potential adverse impacts from land treatments to area wildlife species would vary somewhat according to treatment type, as described following.

Prescribed Fire Treatment Impacts - Fire-induced impacts to shrub overstory conditions important to wildlife may be expected to linger for a period of about 15 to 30 years or more depending on localized environmental factors, including subsequent wildfire disturbance, grazing use following treatment, climate, and local soil characteristics (Paige and Ritter 1999). Sagebrush re-colonization following fire disturbance in Malheur County has been shown to be quite variable but tends to be very slow in Wyoming big sagebrush types and more rapid in basin or mountain big sagebrush types.

Fire utilized in quaking aspen stands would be expected to stimulate clone growth and over time produce desired conditions of multi-aged stands. Protection of aspen regeneration following fire would be necessary to limit the potential for damage due to wildlife and livestock browse.

Fire-caused impacts to sage grouse nesting habitat can be substantial because of the nature of fire behavior. Fires tend to spread within the highest density grass, forb, and shrub cover areas where fuel loading is relatively high, such as habitats associated with successful sage grouse nesting efforts, leaving behind a low-density shrub mosaic, if any shrub canopy is left. Subsequently, the best shrub/grass nesting habitat is altered for a number of years, and the plant communities which remain are either substantially unusable for nesting or allow more vulnerability to predator impacts because of diminished cover qualities. Therefore, broadcast fire treatment in big sagebrush communities with a relatively low proportion of actual blackened area can significantly reduce opportunities for nesting success for species such as sage-grouse, because they depend on patches of high-density sagebrush cover for nesting security, which are most likely to burn. As a result, habitat mosaics, often promoted on the basis of their expected habitat diversity benefits to wildlife, can actually be harmful for some key species of wildlife, including sage-grouse. Exceptions to this include (1) burns conducted on previously cut western juniper stands where trees are felled on-site, (2) where grass, forb, and shrub densities are already limited due to western juniper, and (3) where burning conditions limit the potential for fire to spread more than a few yards from the felled tree.

Sage grouse nest site fidelity (the tendency for hens to return to the same general locations annually) also appears to play a role in the overall impacts caused by fire in nesting habitat. After selecting the best available sites for nesting and incubating, hens will typically return to the same general areas repeatedly throughout their lifetime. Thus, when preferred nesting locations are altered by fire or other long-term adverse habitat alteration, hens are then forced to seek other habitat nearby which may or may not provide quality cover values. Scientific evidence suggests that sage-grouse are simply not very well adapted to fire disturbance impacts, and this opinion challenges the wisdom of reintroducing fire into sagebrush-steppe ecosystems when sage grouse habitats and populations are at risk of decline.

It has been argued on the basis of multi-year research conducted in Idaho that sage grouse population declines following fire disturbance in Wyoming big sagebrush types are explained by the interrelated factors of nesting habitat reductions and nest site fidelity (Connelly et al. 2000). The impact of disturbance on grouse habitat tends to be further compounded because the species has a low reproductive rate and long lifespan and tends to recover slowly from population reductions. This slow population response is quite different from several other upland game bird species, such as California quail, that enjoy high reproductive rates and the capacity to recover rapidly from population losses.

Conditioned forage (previously burned or grazed areas) availability following fire treatment would be expected to temporarily attract a wide variety of game and non-game species seeking fall, spring, or summer green-up (SEORMP Appendix F, "Grazing Use Considerations for Upland Habitats"). This is a normal and predictable wildlife response to habitat change brought about by fire. However, beneficial fire effects on forage qualities are generally short-lived (2 or 3 years), and the positive influences may be more than offset by longer term habitat structure and composition changes caused by fire disturbance.

Fire effects may or may not improve herbaceous plant composition and abundance in rangelands. Vegetative response to fire disturbance is dependent on pre-fire plant composition and subsequent grazing practices. Some argue on the basis of research findings, that grasses and forbs in many sagebrush types may simply be more visible after a fire and not necessarily more abundant (Montana Department of Fish, Wildlife and Parks 1995). Crawford et al. (2004) report that in Wyoming big sagebrush-dominated communities there is little evidence that fire will enhance habitat where there is already a balance of native shrubs, grasses, and forbs. In addition, paired plot research has shown that fire causes indirect negative effects to sage grouse nesting and brood rearing habitat qualities by diminishing the abundance of insect food sources, including ants and beetles that are important to chicks. However, Miller et al. (2005) identified that mechanical removal of western juniper followed by wet-season burning of slash maintained desired understory species and controlled western juniper.

Prescribed fire in lower elevation Wyoming big sagebrush types would be expected to result in increased risk of cheatgrass expansion within NFMGMA (USDI BLM 2003). Field assessments identified that cheatgrass is widespread in lower elevation areas of NFMGMA at the present time, and therefore presents a potential long-term threat to wildlife habitat integrity. This threat involves a gradual encroachment of cheatgrass where it is not present

and subsequent changes in fire frequency that threaten sagebrush-dependent wildlife and big game winter range over the long-term.

Prescribed fire utilized within forest and mountain shrub communities would be expected to improve habitat for species in the area due to the removal of encroaching western juniper, removal of undesirable conifer species, and improvement of understory species structure and composition. For species such as northern goshawks, appropriately timed fire treatments can lessen the risk of catastrophic stand-replacing fire and maintain or improve habitat for prey.

Mechanical Treatment Impacts - Mechanical control methods would allow for a more predictable and “wildlife-friendly” land treatment outcome, compared to prescribed fire treatments. Treatment avoidance areas may be more easily attained with mechanical means compared to fire. Even with the best precautions taken prior to ignition, fires may escape and result in a disturbed area much larger than what may be desired or anticipated. The possibility of these unintended consequences could be eliminated or reduced substantially by using mechanical means such as brush-beating with rubber-tired vehicles or cut-and-leave western juniper control.

Mechanical habitat manipulation has the added advantage of leaving shrub plants in place following treatment. Consequently, long-term habitat recovery of multiple canopy layers (shrubs and herbaceous plants) can proceed more predictably and rapidly than in most broadcast burned areas where, in contrast, nearly all shrub cover may be eliminated. Temporarily reduced shrub cover competition as a result of brush-beating may then be expected to foster moisture and plant nutrient conditions that allow for improvement of herbaceous plant vigor.

Mechanical control methods may nevertheless result in productivity decline when conducted within sage grouse nesting habitat. In Montana, the number of breeding males declined by 73% after only 16% of the habitat was plowed (Connelly et al. 2000). It is possible these kinds of nesting habitat impacts from mechanical treatment could be at least partially avoided by leaving a well distributed mosaic of high density shrub habitat within treatment target areas.

Mechanical removal of western juniper around aspen stands, in mountain shrub communities, and at springs would be expected to improve habitat for wildlife by maintaining existing habitat, reducing hiding cover for predators of big game, and where juniper density is high, would allow for exclusion of these areas for approximately 3 years from livestock grazing.

VEGETATION MANIPULATION IMPACTS DISCUSSION

From the standpoint of wildlife habitat management, mechanical control of sagebrush and Western juniper would be considered the preferred land treatment option because of the chances for relatively rapid and reliable sagebrush re-colonization and comparatively fewer risks than with broadcast fire treatment or chemical applications.

Wildlife of management importance to NFMGMA, including horned larks and pronghorn, species typically associated with grassland conditions or low shrubland vegetative structure, would likely benefit from the results of land treatments. However, the loss of the structural complexity afforded by existing western juniper and sagebrush would reduce available habitat for migratory birds and northern goshawks.

Over the long term, sagebrush re-colonization would likely occur within most newly treated areas, and multi-canopy plant communities of shrubs and herbaceous plants would gradually become re-established. The amount of time that is required for sagebrush plants to attain full maturity and provide quality structural values for wildlife is not known for NFMGMA.

Mature sagebrush in properly grazed or undisturbed rangeland typically provides very high quality wildlife habitat characteristics (Thomas and Maser 1984a). Even at what may be considered relatively high canopy cover values (>20%), mature sagebrush presence does not necessarily imply an unhealthy rangeland ecological status (Welch and Criddle 2003), diminished wildlife habitat quality, or the need for prescriptive management to reduce sagebrush dominance. Sagebrush communities with tall stature and relatively large canopy volume consistent with site capabilities offer forage for animals that eat sagebrush, and they supply quality habitat structure that is important for nesting, escape, hiding, and shelter from severe wind, rain, snow, and relief from temperature extremes.

In contrast to mature communities, young sagebrush stands are often incapable of providing enough hiding or nesting cover volume to be effective habitat for wildlife. This aspect of sagebrush steppe wildlife habitat management is true on both native and modified rangelands, crested wheatgrass seedings, and it is the reason why it was highlighted as a relevant management consideration for wildlife in the SEORMP FEIS. Refer to Thomas and Maser (1984a); SEORMP FEIS Figure 2-1, “Contrasted Levels of Wildlife Use in Monotype Crested Wheatgrass and Big sagebrush Communities”; and SEORMP Appendix F.

Large, contiguous blocks of native or exotic grassland habitat in the hundreds or thousands of acres, are considered to be an immediate and long-term threat to sagebrush-dependent wildlife populations of Vale District. Wildfire over the last several decades has already impacted large portions of rangeland within MRA and left them in either a temporary or persistent grassland condition.

According to Vale District GIS data, MRA burned acres occupy a 355,200 acre footprint of land area. Several locations have burned repeatedly between 1980 and 2005 and they will likely burn again in the future. Moreover, the Vale burned acreage figure does not account for currently existing grassland conditions that were the result of disturbance prior to 1980. In other words, the GIS acreage figures and patterns actually underestimate the full landscape level impact of fires and land treatments to sagebrush dependent wildlife. Large-L-block grassland patterns are a matter of concern for wildlife management, particularly in Wyoming big sagebrush communities, because (1) they are unsuitable for sagebrush-dependent wildlife until shrub cover has become reestablished and attains a size and maturity which will support their life history functions, and (2) they fragment habitat continuity which can increase predator losses and cause genetic isolation.

Natural recovery of Wyoming big sagebrush can be problematic because it typically takes a long time. Sagebrush seedling establishment is dependent on the presence of live seed producing shrubs and the climatic conditions, which will permit them to produce viable seed. Even under the right conditions, recovery tends to occur sporadically and at a very slow rate. Thus, it follows from a sagebrush-dependent wildlife habitat perspective, the larger the grassland area, the slower the expected rate of shrub layer recovery, and the greater the long-term impact to sagebrush-dependent animals at risk. Knick (1996, 1995) refers to fragmentation in sagebrush habitat, especially cheatgrass dominated areas, and describes why grasslands are labeled “hostile” environments for sagebrush-dependent landbirds.

Both large-block grasslands and dense western juniper woodland conditions may become particularly problematic for wide-ranging special status sagebrush-dependent species such as sage grouse. This is because sage-grouse travel on foot throughout large home ranges (especially during spring and early summer brood rearing periods when chicks are small and vulnerable) while in pursuit of their seasonally changing life history needs. Sagebrush communities with shrub cover continuity over large areas therefore offer a multitude of options for travel among habitats while still maintaining habitat security from predators. Sagebrush provides essential security cover during seasonal movements. Large contiguous blocks of sagebrush habitat, formerly abundant in the west prior to European settlement, have continued to diminish in extent from the combined impacts of wildfires, land treatments, western juniper encroachment, and a number of other disturbances.

Many of the environmental impacts that cause sage grouse habitat fragmentation and loss are fortunately not a problem in NFMGMA. For instance, energy exploration and development, high road densities, urban encroachment, power-line corridors, pesticide application, existing wild horse herds, sagebrush die-off due to prolonged drought, and agricultural conversion to croplands unsuitable for sage grouse are not adverse factors in NFMGMA. The absence of virtually all these influences makes it important to manage the existing threats of western juniper expansion and altered fire regimes due to flammable invasive plants.

Sagebrush structure, forage, and cover values important to wildlife would be maintained in formerly treated areas including Beulah Seeding, Big Seeding, Little Seeding, and House pastures. Crested wheatgrass habitats supporting middle to late maturity sagebrush shrubs at about 10% or more canopy cover, as observed in Big and Little Seedings, provide multi-layered plant cover that supports large and small mammal use, as well as a mixed community of sagebrush and grassland landbirds (McAdoo 1989., Holmes and Barton 2003). These wildlife habitat values are the reason why the SEORMP ROD specifies in Appendix F that most seedings should have shrub cover capable of supporting sagebrush-dependent wildlife over at least 25% to 50% of the surface acreage of each seeded pasture.

As a rule, the most diverse, productive, and desirable sagebrush shrubland habitat is associated with plant communities that support multiple species of native forbs and grasses in the herbaceous understory (SEORMP, Appendix F). These complex, multi-canopy shrubland conditions, which are prevalent in NFMGMA, are associated with rangelands classified as mid, late, or potential natural community ecological status as per Natural Resource Conservation Service site guides. However, it is important to note that sagebrush steppe wildlife habitat values are not always necessarily found at mid, late, or potential natural community status. Rangelands that may have comparatively weak understories or high shrub canopy cover, often classified as early ecological status, may provide important functions and value for wildlife habitat. For example:

- Black-tailed jackrabbits, often found at lower elevations in early ecological status, play an important role in sagebrush steppe food chains. Jackrabbits influence raptor population abundance and occurrence (Craighead and Craighead 1969). Their presence may help to balance potential impacts of mammalian or avian predation on species such as sage grouse when they are available as an alternate predator food source.
- Mule deer in eastern Oregon seek heavy mountain shrub and sagebrush shrub cover types (30% to 50% canopy cover) for escape, security, and fawning activity (Trainer et al. 1981).
- Based on Weiss and Verts (1984) and recent investigations in Lakeview, Oregon, pygmy rabbit burrows are typically found in tall, high density shrub patches (Todd Forbes, Lakeview BLM, personal communication, 4/2004).
- Landbird population sampling funded by BLM in Oregon and Washington (Holmes and Barton 2003) has shown that “Wyoming and basin big sagebrush sites with shrub cover in the 20-30% cover range provide valuable habitat for several sagebrush obligate bird species (sage thrasher, sage sparrow, Brewer’s sparrow, gray flycatcher) even when they do not support much herbaceous vegetation in the understory”.

Examples cited, illustrate why it can be important for BLM to conserve a certain amount of low ecological status sagebrush habitat within land treatment areas, unless there are compelling reasons for total shrub canopy elimination such as imminent expansion of noxious weeds. From a wildlife habitat conservation perspective, shrub cover alone can account for most if not all of the wildlife habitat value found in rangeland and any remaining early condition habitats can provide readily available seed sources for long-term habitat recovery in treated areas.

Compared to current conditions, proposed western juniper treatments may result in habitat benefits to big game because of maintenance of winter browse species and thermal and hiding cover. Pronghorn habitat benefits would be considered incidental at best. Mule deer in open rangeland and away from agricultural crops tend to occupy complex mountainous topography, draws with tall vegetative cover, and riparian habitats where water and succulent, nutritious forage are available most of the year, habitats that are abundant within NFMGMA.

Sage grouse leks, which are locations used by grouse for breeding and display activities, are localized within NFMGMA, so it is highly probable that nesting activity is also localized within suitable existing big sagebrush habitats. No nesting habit studies have been conducted within NFMGMA, so there are no locally-derived data available to help BLM avoid potential impacts to nesting habitat. Nevertheless, published literature provides insight into sage grouse nesting behavior that is helpful in considering and analyzing the impacts of land treatment.

With variable nest selection behavior and the lack of a detailed, fine scale habitat map for NFMGMA, western juniper treatments would likely increase overall sage grouse nesting success in local areas as perches for predators are eliminated and shrub cover values are reclaimed.

Compared to current conditions, land treatments of any sort would decrease the amount of available sage grouse winter range. However, based on the wide distribution of sagebrush cover, it is likely that the amount of sage grouse winter habitat loss for NFMGMA would not be substantial. There would very likely be ample opportunity for wintering sage grouse to secure sagebrush forage and cover in untreated rangelands nearby, even during years of heavy snowfall.

Impacts of land treatments to pygmy rabbit habitat would be uncertain. Surveys to detect pygmy rabbit absence or presence have not been conducted in proposed treatment areas. However, based on intensive surveys that have been conducted in Lake and Harney Counties in Oregon, the most productive pygmy rabbit habitat in NFMGMA is probably located within low sagebrush and big sagebrush transition communities where dense patches of sagebrush in deep soils are present. These kinds of micro-site habitats occur at elevations above those proposed for land

treatment. Given that pygmy rabbits are currently under status review by the USFWS, it would be advisable for BLM to conduct surveys for their presence prior to initiation of land treatment.

GRAZING IMPACTS

Compared to current management, proposed grazing use would generally be expected to continue to maintain adequate forage quality and quantity necessary to support ODFW big game management objectives or benchmarks for mule deer and pronghorn. Big game species are highly mobile and generally able to adapt to the scattered, localized grazing use impacts that would be typical of Alternative II.

Intensified livestock grazing use due to redistribution of grazing or within pastures reduced in size (due to additional fencing and/or water development) would be expected to substantially compound the overall influence of livestock grazing disturbance on wildlife habitat in more localized areas. This outcome would be likely to occur because livestock grazing influences often overlap substantially with landforms and micro-habitats important for landbird nesting success. These intensified impacts would not be expected to occur everywhere within NFMGMA pastures because upland livestock grazing impacts typically occur locally at water sources and then radiate outward. Livestock cannot access all of the public land within NFMGMA because of topography and distance from water.

Adverse grazing impacts to wildlife forage and cover qualities would most likely occur during low precipitation periods that inevitably occur within eastern Oregon, as discussed in Alternative I.

These conclusions regarding grazing impacts are based on Holechek (1988, 1999) where he reported, "...heavy stocking consistently caused a downward trend in ecological condition." However, Holechek has also demonstrated that, in the southwest, conservative stocking rates have resulted in long-term economic benefits for producers as well as healthy rangeland conditions.

Grazing and/or trailing in pastures before the onset of sage grouse nesting activity in March through April may result in diminished opportunities for nesting success because of the reduction in herbaceous plant cover important for nest concealment and physical disturbances caused by cattle.

Domestic sheep grazing use would be expected to result in wildlife habitat impacts generally similar to those attributable to cattle. However, sheep can cause more adverse impacts to browse and forb species important for area wildlife of management importance. Active herding of bands would be expected to limit the impacts of sheep browsing on shrubs and grazing of forbs.

PROJECT IMPACTS

Compared to current management, proposed livestock water pipeline installation in Pete's Mountain and Juniper Gulch Pastures would be expected to increase the extent and likelihood of adverse grazing use impacts on big game winter habitat and sagebrush-dependent wildlife habitat, due to re-distribution of grazing impacts on cover and forage values in the area surrounding the newly developed water sources.

Maintenance of roads needed for new pipelines in native range may ultimately result in cheatgrass expansion within NFMGMA and thus potentially reduce habitat condition over the long term. Cheatgrass abundance is closely tied to altered fire regimes and expansion of grassland communities considered to be hostile for sagebrush-dependent wildlife and big game.

New pipelines located along existing roads would likely provide some additional drinking water for species such as pronghorn, deer, elk, and landbirds, and potentially including sage grouse. Although some additional adverse grazing impacts to wildlife habitat quality would be expected in these locations, roads are usually corridors of current and historic livestock movement, so the impacts would not result in much new wildlife habitat disturbance.

Compared to current management, installation of new pipelines into native range (and not along existing roads) would be expected to cause short-term impacts from human activity and new long-term habitat disturbance. Over the long term, new roads associated with pipeline maintenance actions would be expected to increase the potential risk of cheatgrass expansion and result in risks to habitat qualities already described.

Installation of water trough escape ramps would greatly reduce the potential for small animal entrapment and drowning. Some limited instances of wildlife mortality would likely continue even with escape ramps, but the levels of loss would be considered similar to those already foreseen under the SEORMP ROD and BLM policy (USDI-BLM 1990). BLM policy under the principles of multiple-use management can substantially reduce but not eliminate the possibility of wildlife mortality resulting from range improvement projects such as fences and water developments.

Placement of new livestock water sources would generally provide a limited and artificial benefit to species of management importance in NFMGMA. Existing water developments have already altered the natural distribution, flow regimes, and summer/fall period of green forage availability for wildlife.

On balance, the net benefits to wildlife that may be gained by additional water availability provided for livestock grazing administration would be outweighed by potential adverse consequences to wildlife habitat from additional concentrated grazing use immediately around new water sources and adjoining native uplands. Under the SEORMP ROD (Appendix F, "Wildlife Habitat Descriptions and Considerations"), "...maintenance of currently ungrazed native range conditions by avoiding new water developments, salting, and fencing is considered a beneficial mitigating measure for the protection of wildlife habitat values."

Areas unallocated to grazing use in upland and riparian exclosures (regardless of whether they are study plots or livestock management fences) would provide high quality cover, structure, forage, and security for wildlife within the larger matrix of grazed NFMGMA rangelands. New and existing unallocated areas would function as wildlife habitat reserves where the combined values of forage, cover, structure, and security are maximized. Disturbances to wildlife, such as landbird nest trampling and shrub structure alteration associated with grazing use, would be avoided. The most significant upland and riparian habitat benefits to wildlife would be derived from relatively large excluded areas. Although small exclosures (roughly ten acres or less) typically supply some good quality habitat, especially in riparian areas, their highest value is often associated with the information they can provide to BLM about long-term plant community change (or stability) in the absence of grazing disturbance.

Because proposed corridor or exclosure fencing would prevent livestock access to selected riparian areas, recovery of habitats adversely impacted by past grazing use would proceed as rapidly as site capability would allow. Riparian habitat quality, composition, distribution, and structure in such areas would be maximized. Herbaceous cover and forage values in perennial wet meadows would be expected to improve for most small animals such as songbirds and large mammals. Habitat values in meadows that dry out early in the year and do not become re-saturated until winter snowmelt may improve somewhat but not nearly as substantially as those with perennial surface water. Wet meadow plant cover within exclosures can eventually become dense, with accumulation of dead plant material, and be less desirable as food sources for some species such as sage grouse.

Due to natural site potential limitations, woody plant composition in upper stream reach meadows would continue to be very sparse or absent. Where site potential does allow, especially in mid to lower elevation stream reaches, woody riparian plant cover and structure would be expected to expand substantially in extent and volume, thus benefiting species that occupy dense shrubby habitats.

Livestock trough relocation and spring restoration actions would be expected to yield some wildlife habitat benefits by reducing some localized grazing pressure in wetlands and gradually improving riparian function. These actions would be expected to help prolong green forage availability for wildlife in the summer/fall period and likely enhance forage quality and abundance.

Temporary disturbances to wildlife resulting from spring restoration activity would be short-lived and inconsequential in the long term. Based on findings from some spring/stream exclosures in Malheur County, additional wildlife drinking water may be made available after reducing the impacts of concentrated grazing use around natural water sources.

Compared to current conditions, potential for adverse impacts to wildlife as a result of temporary and permanent fence construction would be increased under this alternative. Anticipated fence-related impacts addressed under the SEORMP FEIS may include the following:

- Fence-building activities conducted in May during the peak of nesting season, may result in some sage grouse nest abandonment.

- Fences crossing canyons or draws would likely pose the greatest threat of additional big game injury or mortality, because topographic relief makes game passage much more difficult than on flat land.
- An increase in wildlife predation by species such as coyotes that can use structures to their advantage in seizing their prey would likely occur.
- Big game and fence collisions, injuries, or entanglement along roads would likely increase. Big game frightened by approaching vehicles often collide with or jump through fences in their attempts to escape. The result is that they can either become entangled or injured. In the absence of vehicle disturbance or other threats, deer and antelope tend to crawl under fences and thereby avoid injuries.
- Sudden and deep snowfall can make otherwise passable fences an obstacle to big game movement and may ultimately result in mortalities or injuries.
- Wooden fence posts or other fence components that offer hunting perches for birds of prey may increase the incidence of raptor-related grouse mortalities, especially when posts are installed near leks or wetland habitats.
- Raptors and sage grouse are known to become entangled and/or killed as a result of accidental fence collision.

BLM fence construction specifications would be expected to substantially limit most potential threats and barriers to wildlife movement (Mitigation, Section 7.7 of this document), but they would not be totally eliminated.

The combined effects of spring reconstruction and subsequent grazing-use disturbance would likely result in several new locations that would support cheatgrass or other weedy species where they do not occur at the present time. Impacts from these invasive species would be most likely to occur within the driest Wyoming big sagebrush types and lower elevation western juniper woodlands (Phase III woodlands as described by Miller et al. 2005).

Alternative II would likely improve upland habitat quality and quantity as western juniper treatments are implemented for reasons already described. All species of management importance, dependent on upland habitat quality within Castle Rock ACEC, would benefit over the long term for reasons already described. The most substantial benefits of this alternative would accrue to species dependent on quality riparian and wetland habitats.

There are no wildlife habitat improvement projects such as big game guzzlers proposed within NFMGMA. Opportunities for potential beneficial effects to wildlife would continue to be absent and adverse impacts to wilderness values resulting from wildlife habitat management practices, such as installation of guzzlers, would be avoided. Given the resource values existing within NFMGMA WSAs, the missed opportunities for wildlife habitat development would not be considered a substantial limitation or issue for MRA.

SUMMARY

Alternative II impacts would generally be considered consistent with the desired wildlife habitat conditions for sage grouse and communities of terrestrial wildlife described in the SEORMP (see SEORMP FEIS, Chapter 2, page 68-69; and Appendix F, "Grazing Use Considerations for Upland Habitats"). It would also conform to Western Association of Fish and Wildlife Agencies (WAFWA) management guidelines for grazing use in sage grouse nesting/brood rearing habitat as well as the Oregon/Washington BLM interim management guidelines for sage grouse habitat (USDI BLM 2000).

Alternative II would be expected to meet the habitat elements addressed in Wildlife and Wildlife Habitat SEORMP ROD Objective 1 (Riparian Habitat), Wildlife and Wildlife Habitat SEORMP ROD Objective 2 (Upland Habitat) and Special Status Animal Species SEORMP ROD Objective 1 (Special Status Species). NFMGMA activity plan objectives tiered to these ROD objectives would also be met.

5.9.3 Alternative III - Wildlife and Wildlife Habitats; Special Status Animal Species

BLM authorized actions would continue to have no effect on northern bald eagle winter use, wolves, or lynx for reasons already described in the Alternative I analysis. Therefore, BLM actions would conform to the Special Status Species objective of the SEORMP, and consultation with the USFWS regarding northern bald eagles, wolves, lynx, and Section 7 of the ESA would not be necessary.

Compared to current conditions, land treatments in Alternative III would temporarily impact Wyoming, mountain, and basin big sagebrush communities over fewer acres as a consequence of seeding, prescribed fire, brush-beating, or chemical spraying. Habitat values important for meeting the life history needs of most terrestrial wildlife of management importance would be adversely affected in the short-term due to temporary removal of shrub overstory canopy structure as follows:

- Native grassland extent would increase in Big and Little Seeding Pastures, but shrub cover leave areas would be incorporated into the land treatment layout, so some wildlife habitat connectivity with adjoining big sagebrush communities and interior islands of shrubland habitat would be maintained following treatment, similar to Alternative II.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from past wildfires, historic treatments, and the proposed BLM treatments would increase from 13,549 acres (13%) to about 14,969 acres (14.3%) after the proposed treatments. The cumulative impacts of land treatments and wildfire would therefore meet NFMGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a 25% threshold in big sagebrush rangeland.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from historic and proposed BLM land treatment (not including past wildfires) would increase from about 0.4% (approximately 400 acres) to about 1,800 acres (2%) after the proposed treatments. The cumulative impacts of land treatment would therefore meet the NFMGMA Terrestrial Wildlife Objective 1, which is to limit grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) resulting from only BLM actions, to a level at or below a 20% threshold in big sagebrush rangeland.
- Alternative III would meet the SEORMP ROD objectives and NFMGMA Terrestrial Wildlife Objective 1 for wildlife communities because of the amount of land treatment and manner in which the land treatments would be completed. The treatments would avoid contiguous grassland patterns and would incorporate sagebrush leave areas into their design. More than 85% of Big Seeding Pasture and 61% of Little Seeding Pasture would continue to support complex shrubland habitat following treatment, which would conform to the SEORMP ROD (Appendix F) for native rangelands the same as Alternative II.
- Slightly less than 86% of all remaining big sagebrush rangelands in NFMGMA would remain as complex shrubland habitat capable of supporting sage grouse and other sagebrush-dependent species.

Based on fire history over the last 30 years, NFMGMA wildlife habitat would not be vulnerable to large or repeated wildfire disturbance, but at lower elevations, fire frequency could increase due to the presence of cheatgrass and medusahead, landscape characteristics, and weather patterns.

Areas of western juniper encroachment would continue to pose limitations on wildlife habitat fragmentation and forage quality, considered to be widespread in the area.

As analyzed in Alternative II, mechanical control would be the preferred option for land treatment.

Compared to current management, the cumulative impacts of proposed stocking levels, new pasture/exclosure fencing, altered grazing schedules (including trailing), pipeline construction, and more livestock watering troughs would be similar to those discussed in Alternative II, but would be imposed on habitat rested and allowed to recover for a period of 3 years.

The most significant potential for adverse effects would occur in upland habitats as a result of intensified grazing use and smaller pasture sizes, as already described in the Alternative II analysis. Grazing the same number of cattle within pastures that are reduced in size due to fencing can lead to more concentrated livestock grazing impacts on wildlife forage, cover, and structure. However, Alternative III livestock grazing effects on wildlife habitat would likely be moderated because of the 3-year grazing rest in pastures where S&Gs were not met, and would allow for accelerated improvement of riparian and upland communities. Although some new areas of livestock grazing impacts would occur under this alternative, most of the important herbaceous plant values for sage grouse and other wildlife would continue to be protected over a large area.

Compared to current management, woody and herbaceous plant community composition, distribution, and structure on streams would be expected to gradually improve wildlife habitat conditions over the long term where summer and fall grazing use previously occurred on an annual basis. Proposed rest in Alternative III would allow for

accelerated improvement of habitat in riparian communities over that anticipated under proposed use in Alternative II.

Herbaceous cover and forage values in perennial wet meadows would be expected to improve gradually for small animals, such as landbirds, and for large mammals. Woody plant cover in many upper stream reach meadows would likely be expressed more rapidly than in Alternative II. Where riparian site potential allows mid to lower elevation stream reaches with deeper soils, woody riparian plant cover and structure improvement would be expected. These results would benefit species such as yellow warblers, yellow-breasted chats, and mule deer, which benefit from the presence of complex, mature woody plant canopies. Where corridor or enclosure fencing no longer allows livestock access to riparian areas, habitat recovery would advance as rapidly as site capability would allow and result in benefits to wildlife already described in the Alternative II analysis.

Short- and long-term impacts to wildlife habitat as a consequence of additional fencing would increase compared to existing management, and would impact wildlife in ways similar to those already described in the Alternative II analysis.

Lost opportunities to develop wildlife projects in Castle Rock and Beaver Dam Creek WSAs would result in the same impacts already described under the Alternative II analysis.

Alternative III would continue to maintain a high level of upland habitat quality and quantity in Castle Rock and Beaver Dam Creek WSAs. Special Feature wildlife dependent on upland habitat quality would be provided sufficient forage and other habitat values as described in the affected environment. Riparian habitat limitations for Special Feature wildlife would be expected to improve more quickly than in Alternative II.

Influences on wildlife populations beyond the control of BLM authorizations would continue to affect NFMGMA as described in the Alternative I analysis.

SUMMARY

On balance, Alternative III impacts would generally be considered consistent with most of the desired wildlife habitat conditions for sage grouse and communities of terrestrial wildlife described in the SEORMP (see SEORMP FEIS, Chapter 2, page 68-69 and SEORMP ROD Appendix F, "Grazing Use Considerations for Upland Habitats") but at a lower level due to the continuing problem of untreated western juniper. It would also meet the WAFWA management guidelines for grazing use in sage grouse nesting/brood rearing habitat and the Oregon/Washington BLM management guidelines for sage grouse habitat.

Alternative III would be expected to meet the habitat elements addressed in the SEORMP ROD objectives for Wildlife and Wildlife Habitat SEORMP ROD Objective 1 (Riparian Habitat), Wildlife and Wildlife Habitat SEORMP ROD Objective 2 (Upland Habitat) and Special Status Animal Species SEORMP ROD Objective 1 (Special Status Species). NFMGMA activity plan objectives tiered to the ROD would also be met in most habitats.

5.10 Cultural and Paleontological Resources

5.10.1 Alternatives I, II, and III - Cultural Resources

CULTURAL RESOURCES SEORMP ROD OBJECTIVE 1: Protect and conserve cultural and paleontological resources.

CULTURAL RESOURCES SEORMP ROD OBJECTIVE 2: Consult and coordinate with American Indian groups to ensure their interests are considered and their traditional religious rites, landforms, and resources are taken into account.

NRMGMA CULTURAL RESOURCES OBJECTIVE: Same as SEORMP Objectives 1 and 2.

Prior to all surface disturbing activities, a Class III cultural resource survey would be conducted in the proposed project area. The survey would be conducted at a Class III level utilizing pedestrian transects spaced 30m or less apart. The width of the transect spacing would be determined by the nature and extent of the cultural resources

which may be present in the project area, as determined by a Class I file search prior to field work. Where possible, identified cultural resources would be avoided or mitigation measures implemented to minimize impacts.

Vegetation treatments proposed could have a limited adverse effect on cultural resources. Soil surface disturbances inherent in treatments can destroy the integrity of archaeological sites by moving artifacts vertically and horizontally from their original locations. Vegetation treatments include but are not limited to prescribed fire, brush-beating, and drilling and seeding operations.

Utilizing prescribed fire as a vegetation treatment presents the potential for long-term soil surface disturbance. The loss of vegetation and litter from fire would subject soils to enhanced wind and water erosion. These natural factors would be more likely to move surface artifacts from original positions, potentially compromising the integrity of archaeological sites. The greatest impacts to cultural resources are expected to occur in the first year, when vegetative cover is minimal and erosion is most prevalent, but most soil surface characteristics should return to pre-fire conditions within three growing seasons. The lack of vegetative cover also increases the opportunities for illegal surface and subsurface looting which occur as surface visibility increases. The reestablishment of stable soil surfaces would prevent further disturbance to cultural resources, but the effects of the first 33 years would be permanent and irreversible. To protect soil characteristics and thus the integrity of cultural resource sites during prescribed fire applications, seasonal and moisture condition restrictions would be incorporated into burn plans.

Brush-beating would also compromise the locational integrity of artifacts by introducing concentrated horizontal movement during initial implementation of the action. The severity of horizontal movement is dependent on the height of the blades of the beater. Conversely, brush-beating leaves large amounts of organic litter on the soil surface; influences of wind and water erosion would be reduced over the long term. Although shrubs would be defoliated, the standing woody material would aid in reducing snow scouring and potential wind erosion (SEORMP FEIS Appendix S, "Standard Implementation Features and Procedures").

Drill seeding can also adversely impact cultural resources, breaking artifacts or moving them on both horizontal and vertical planes. The impact of rangeland drilling equipment would loosen and displace the top six to eight inches of soil within the furrows, which are usually 10-12 inches apart. This soil disturbance is temporary, with furrows acting as moisture traps, and new plants would begin to stabilize soil within the first year following drilling. The disturbances to cultural resources would be considered minor to moderate depending on the nature and extent of the cultural resources. Artifacts on the ground surface are displaced by natural forces in much the same way, though not on the scale that drilling projects cover.

Temporary fences would be placed around the vegetation treatment areas for at least two growing seasons. Short-term compaction effects to soils and hence to archaeological artifacts located on the ground surface can occur around temporary fencelines from livestock trailing along the perimeter. Disturbances to cultural resources can consist of displacement of artifacts within the narrow trailing corridor and in areas of cattle congregation. Temporary fence construction would be designed to avoid cultural resources. In general, impacts from land treatments to cultural resources would be minimal to moderate. Archaeological artifacts are known to move both horizontally and vertically (across the ground surface, and up and down through the soil profile) to some degree from natural forces such as freeze/thaw, sheet wash, wind action, and rodent activity. Any effects to cultural resources, however, are irreversible and are generally more severe as a result of man-made actions than of natural weathering events, unless those events are catastrophic.

Cultural resources frequently occur near or adjacent to water sources. Alternative II and III require the greatest number of acres fenced along RCAs to meet management objectives for riparian/wetland areas. Spring project renovation would consist of reconstructing numerous springs. Spring project restorations and construction of off-site troughs would benefit cultural resources located at or near springs and wet meadows. Cultural resources located near streams would benefit from corridor fences and off-stream water sources, which remove livestock from drainage channels, allowing reestablishment of vegetative cover. Livestock trampling breaks artifacts and moves them from their original locations. The stabilization of soils by vegetation would protect the surface integrity of cultural resource properties, keeping artifacts in their original positions. Although riparian areas would benefit from off-site water sources, concentrated livestock use would increase in areas immediately around new spring troughs. Placement of these new water sources would avoid all cultural resources, and impacts would be minor. Riparian fence construction would not affect cultural resources. If substantial cultural resources occur within springs, wet

meadow, or runoff areas frequented by livestock, those areas would be fenced to avoid future cumulative damage that would otherwise accrue from livestock trampling.

Whether or not cultural resources would be adversely affected by the pipeline projects is depended on the extent of previous disturbance to the surface and subsurface components of cultural material present. If construction occurs outside previously disturbed areas, cultural resources would be avoided during project construction. Site restoration would be limited to those areas of previous disturbance. The proposed new livestock water pipelines and water storage tank would not affect cultural resources, as they would be avoided during project placement and construction. Road access for construction and maintenance along the new pipelines and troughs would be unlikely to result in additional impacts to cultural resources. Cultural resources located along those routes will have been previously disturbed by vehicle traffic. Construction and maintenance would avoid cultural resources, or keep within boundaries of previously disturbed areas.

SUMMARY

The objective for cultural resources would be met.

5.10.2 Alternatives I, II, and III - Paleontological Resources

CULTURAL RESOURCES SEORMP ROD OBJECTIVE 1: Protect and conserve cultural and paleontological resources.

NFMGMA CULTURAL RESOURCES OBJECTIVE: Same as SEORMP Objective 1.

Fossil flora and faunal resources are located where lakebed sediments are present. Prior to all surface disturbing activities a Class I file search would be conducted to determine whether or not fossil flora and faunal resources are located within or adjacent to the project area. If fossil bearing sediments are present, a Class III intensive survey utilizing pedestrian transects and surface survey would be conducted in the proposed project area. Fossil resources are fragile by nature; therefore, all fossil localities would be avoided or mitigation measures proposed to protect them.

Vegetation treatments proposed would have an adverse effect on paleontological resources if present in the project area. Soil surface disturbances inherent in treatments would destroy the integrity of fossil flora and faunal sites. For all vegetation treatments, including but not limited to prescribed fire, brush-beating and drill seeding operations, fossil localities would be avoided.

Temporary fences placed around the vegetation treatment area and fences designed as enclosure fences or pasture division fences may cross fossil bearing sediments, depending on the alignment and location. If fossil flora and faunal resources are present, the alignment of the fence project would be re-designed to avoid or enclose those localities within the enclosure. Disturbances to paleontological resources can consist of displacement or breakage of fossils within the narrow trailing corridor and in areas of cattle congregation. Any effects to paleontological resources are irreversible and are generally more severe as a result of man-made actions than of natural weathering events, unless those events are catastrophic. Significant paleontological resources may be fenced to exclude livestock, wildlife, and other surface-disturbing activities in an effort to protect this fragile resource.

SUMMARY

The objective for cultural resources (paleontological resources) would be met.

5.11 Recreation and Visual Resources

SEORMP ROD RECREATION OBJECTIVE: Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.

NFMGMA RECREATION OBJECTIVE: Maintain and provide for improved facilities at existing developed recreation sites, construct new recreation sites described in the SEORMP ROD, and provide for diverse opportunities of dispersed recreation activities and a quality outdoor recreation experience while protecting resource values.

SEORMP ROD VISUAL RESOURCES OBJECTIVE: Manage public land actions and activities in a manner to be consistent with visual resource management (VRM) class objectives.

NFMGMA VISUAL RESOURCES OBJECTIVE: Within VRM class areas designated in the SEORMP ROD, manage existing facilities and allow for new facilities and management activities that meet VRM class objectives.

5.11.1 Alternative I - Recreation and Visual Resources

The existing extent and diversity of dispersed recreation settings and the associated quality of dispersed recreation experiences would remain the same. Effects on dispersed recreation activities would be addressed as individual future projects or as activities are proposed and assessed. There would be no direct impacts on the constructed recreation sites. Developed recreation sites would enhance recreation experiences of visitors, address human health and safety, and aid in directing certain recreation activities to managed hardened sites to minimize adverse impacts of concentrated recreation activities to a specific locale while meeting other management objectives within the GMA.

SUMMARY

Management direction of existing and developed recreation facilities and activities would meet recreation and VRM class objectives within the GMA. Effects on aesthetic values would be addressed as individual proposed projects and activities are brought forward and assessed.

5.11.2 Alternative II - Recreation and Visual Resources

The existing extent of dispersed recreation settings would remain substantially unchanged. Over the long term, proposed vegetation manipulations of certain woody species such as western juniper, aspen and mountain mahogany, and fencing of developed spring sources would enhance habitats for various game and nongame animal species, allowing for improved wildlife viewing and hunting opportunities over the long term. The extent of new fencing (pastures, developed springs, and certain reservoirs) would cause an insignificant increase of inconvenience for hunters and hikers in traversing them. Developed recreation sites would enhance recreation experiences of visitors, address human health and safety, and aid in directing certain recreation activities to managed hardened sites to minimize adverse impacts of concentrated recreation activities to a specific locale while meeting other management objectives within the GMA.

Implementing the various proposed projects, with applicable mitigating measures (Section 7.2), would meet established VRM class objectives within the GMA, except for the proposed pipeline and its associated well and access road within Juniper Gulch Pasture. The extent (over 1 mile) of in-slope cutting and associated side casting of materials on the sagebrush/bitterbrush-dominated steep slope within the immediate viewed foreground of U.S. Highway 20 would cause a substantial linear contrast over the long term, precluding meeting the VRM class II objective. Additionally, the project would be in the immediate observable foreground of the Horseshoe Bend recreation site, noticeably degrading existing natural esthetic qualities of the site's setting.

The appearance of periodic burned terrain, the mosaic pattern of the 126 acres of sagebrush-beating, and the 2- to 3-year delay before burning of downed western juniper (where required to meet VRM class I and class II objectives) would visually alter these projects' existing settings during the short term. Long term, the affected visual settings would be enhanced by progressively improved vegetative health, and the presence, appearance and composition of desired native riparian and of upland vegetative species within the affected VRM class areas. Within a VRM class I area that has sparsely distributed young western juniper, flush cutting of the trees followed by their being burned on-site or removed, would provide adequate short- and long-term visual mitigation for protecting esthetic values. Additionally, within the 500-foot wide corridor of the Castle Rock Road (250 feet either side of the road), precluding cutting of any vegetation within the abutting WSAs, and requiring flush cutting and burning/removal of downed western juniper with the option of site-specific retention of all existing woody vegetation along certain segments and widths within this road corridor (to provide vegetative screening), would further enhance protection of the high visual qualities associated with this important key observation and travel corridor. Precluding treatments (such as burning or cutting) of mountain mahogany, where present in the Castle Rock WSA, would provide visual protection and retention of the existing extent of this species within its WSA landscape settings.

SUMMARY

The management objectives for recreation and visual resources would be met, except for the proposed pipeline and its associated new road in Juniper Gulch pasture, which would not meet the location's VRM class II objective.

5.11.3 Alternative III - Recreation and Visual Resources

Impacts of proposed actions to dispersed recreation activities and developed recreation sites would be the same as described under Alternative II, except the lesser extent of improved wildlife habitats created by woody vegetation treatments would cause a proportionate decrease of wildlife viewing and hunting opportunities over the long term.

Impacts to visual resources would be, with one exception, the same as described under Alternative II, noting that the decreased extent of woody vegetation treatments would allow for retention of a larger portion of the existing vegetative cover within the GMA. This would result in less short-term visual impacts to certain landscape settings, including but not limited to portions of the Castle Rock WSA. The one exception is within Castle Rock WSA. The WSA's area subject to flush cut of western juniper (1,525 acres, 25% of the WSA), combined with Phase I western juniper stands and the presence of dense western juniper stands within that area displaying Phase II and III encroachment characteristics that would be subject to cut, would result in a cumulative long-term residual impact of visible flush-cut stumps in a concentrated area, which would attract attention to visitors of the affected area. Thus, the WSA's VRM class I management objective would not be met, even considering employment of flush cut mitigation measures and that some flush cut stumps could, over time, be substantially camouflaged by overgrowth of adjacent vegetation, possibly be partially scarred if burned, and/or over the long term be disfigured by decomposition.

SUMMARY

The management objectives for recreation and visual resources would be met to the same extent as described under Alternative II, except for Castle Rock WSA due to impacts associated with cutting of western juniper. The WSA's VRM class I objective would not be met.

5.12 Special Management Areas

5.12.1 Wild and Scenic Rivers (WSRs)

SEORMP ROD OBJECTIVE: Provide interim management protection of outstandingly remarkable values (ORVs) of rivers found administratively suitable for inclusion in the National Wild and Scenic Rivers System (NWSRS) until Congress acts.

NFMGMA WILD AND SCENIC STUDY RIVER (WSR) OBJECTIVE: For the administratively suitable segment of the North Fork Malheur River, provide interim management protection of the study river's ORVs (scenery, recreation, fish and wildlife) in accordance with guidance for a tentative river classification of "wild."

Alternative I - WSRS

The outstandingly remarkable values (ORVs) of the administratively suitable North Fork Malheur Study River (3.6 miles, 996 acres on BLM) would be protected. The current voluntary temporary reduction of livestock utilization in the Little Malheur Pasture of the Whitley Canyon Allotment slightly reduces the visual evidence of cattle use within the study river's half-mile wide interim management corridor. Use levels prior to the voluntary reduction were the same as when the study river's ORVs were identified and the river's administratively suitability determination was made. Any future proposed actions within the study river's interim management corridor would be assessed on their own merit to determine impacts on ORVs. Proposed future actions determined to that lack the protections of protection for the study river's ORVs would not be approved.

SUMMARY

Over the short and long term, the study river's ORVs would be protected. It would remain administratively suitable with a tentative "wild" classification for Congress's consideration as a component of the NWSRS. The area's VRM class I management objective would be met.

Alternative II - WSRS

In the short term, the current voluntary temporary reduction of livestock utilization in the Little Malheur Pasture of the Whitley Canyon Allotment slightly reduces the visual evidence of cattle use within the study river's half-mile wide interim management corridor. Use, U levels prior to the voluntary reduction were the same as when the study river's ORVs were identified and the river's administratively suitable determination was made. The only new proposed project would be the removal of certain western juniper specimens within a 344 acre parcel of the river's total 996 acre interim management corridor. The affected western juniper are presently predominately widely scattered individual specimens, with very few located on the river's flood plain. With mitigation measures employed (Section 7.9), the felled and burned western juniper would result in nominal residual evidence of the downed trees' prior presence. On the river's flood plain and steep canyon slopes, residual evidence of flush cuts would be difficult to detect. Additionally, where treated on the river's flood plain, the few flush cuts would be substantially camouflaged by growth of adjoining vegetation and, over the long term, affected by decomposition. Following burning of felled western juniper, there would be a virtually undetectable visual change within the river's interim management corridor that that would not attract the attention of a person visiting the area. The landscape setting of the river corridor would be preserved. River bank stabilization and shade provided by the retention of existing western juniper on the river's embankment would benefit the river's fishery including bull trout (a special status species), and wildlife ORVs of the study river. With none of the older western juniper treated, they would remain available for thermal and protective cover of wildlife. Removal of the minimal number of predominately disjunctive and, dispersed western juniper specimens would not affect the study river's fish and wildlife ORVs, and would not adversely impact the recreation and scenery ORVs. Other management actions, conducted with the prescribed mitigation measures, would have no adverse impact on the study river's ORVs. Most dispersed recreation activities would continue to occur along the river itself within its steep canyon setting. The quality of a visitor's recreation experience in the river's setting would not change.

SUMMARY

Over the short and long term, the study river's ORVs would be protected. The qualifying study river segment would remain administratively suitable with a tentative "wild" classification for Congress's consideration as a component of the NWSRS. In combination, the very limited extent and very low density of widely spatially distributed site-specific actions, implemented with mitigation measures (section 7), would meet the area's VRM class I management objective.

Alternative III - WSRS

Impacts under this alternative would be the same as under Alternative II.

SUMMARY

Over the short and long term, the study river's ORVs would be protected. The qualifying study river segment would remain administratively suitable with a tentative "wild" classification for Congress's consideration as a component of the NWSRS. In combination, the very limited extent and very low density of widely spatially distributed site-specific actions, implemented with mitigation measures (section 7), would meet the area's VRM class I management objective.

5.12.2 Wilderness Study Areas - WSAs

INTERIM MANAGEMENT POLICY FOR LANDS UNDER WILDERNESS REVIEW (IMP)

OBJECTIVE: Manage WSAs in a manner to protect and enhance their wilderness characteristics and not impair the suitability of such areas for preservation as wilderness, until Congress acts.

NFMGMA WILDERNESS STUDY AREAS OBJECTIVE: Manage the Beaver Dam Creek and Castle Rock WSAs in accordance with the BLM's WSA IMP to protect and enhance their wilderness characteristics and not impair their suitability for preservation as wilderness.

Alternative I - WSAs

Livestock grazing and associated rangeland projects were present at the time of congressional passage of FLMPA (1976) and represent "grandfathered" uses within the Beaver Dam and Castle Rock WSAs. Under the WSA IMP, "grandfathered" livestock grazing and associated rangeland improvement projects existing on October 21, 1976, may continue to be used and maintained.

The wilderness characteristics of both the Beaver Dam Creek and Castle Rock WSAs would be protected, but the quality of the naturalness of Castle Rock WSA would, over the long term, be degraded without treatment of encroaching western juniper. Continued encroachment of western juniper within the WSA would adversely impact the diversity, composition, and health of historic native vegetative communities and associated wildlife species, their diversity, populations and distribution, and their ecological niches and associated connectivity. Individually and collectively, these are important naturalness and supplemental values of the area. Within the Castle Rock WSA, in the short term, ongoing voluntary non-use of livestock AUMs in both the Castle Rock Pasture of Castle Rock Allotment and the Castle Rock Pasture of DeArmond-Murphy Allotment would improve the natural ecological condition of vegetation and the degree of naturalness of the WSA. Any future proposed action within a WSA would be assessed on its own merit to determine impacts to wilderness characteristics. Proposed future actions determined to not protect a WSA's wilderness characteristics or not meet requirements of BLM's WSA IMP would not be approved.

SUMMARY

Results of management actions would be in compliance with the WSA IMP. The WSAs would be managed in a manner to protect their wilderness characteristics. However, over the long term, continued encroachment of western juniper would adversely affect certain existing wilderness characteristics. The existing livestock uses and projects would meet the non-impairment criteria. Wilderness characteristics would not be so impaired as to preclude the area's suitability for possible congressional designation as wilderness. The WSAs' VRM class I management objective would be met.

Alternative II - WSAs

Livestock grazing and associated rangeland projects were present at the time of congressional passage of FLMPA (1976) and represent "grandfathered" uses within the Beaver Dam and Castle Rock WSAs. Under the WSA IMP, "grandfathered" livestock grazing and associated rangeland improvement projects existing on October 21, 1976, may continue to be used and maintained.

There are no present or proposed projects within the Sheep Rock Pasture of the Castle Rock Allotment in the Beaver Dam WSA. Under this alternative, improvement in ecological condition of the vegetation and associated wildlife habitat values would likely occur, because livestock grazing would be reduced from use every year to 11 year of grazing followed by 22 years of rest. This alternative would enhance the present degree of naturalness, a primary wilderness characteristic of the area. Furthermore, the area's wilderness characteristics of naturalness and outstanding opportunities for solitude and primitive recreation would not be impaired, and the WSA would retain its suitability for possible congressional designation as wilderness.

Within Castle Rock WSA, per WSA IMP direction, the pre-FLPMA constructed fences would be maintained, and the five developed springs for livestock use would be partially reconstructed as needed, and maintained. Mitigation measures (Section 7.9) associated with fence maintenance would be applied. Portions of the Castle Rock and DeArmond-Murphy Allotments are within the Castle Rock WSA. Mitigation measures as described in Section 7 of this EA would be followed for the spring reconstruction and fence maintenance projects per WSA IMP direction. These projects would improve the distribution of livestock and protect natural upland and riparian values, thus decreasing adverse impacts of concentrated or localized livestock use within the WSA. Livestock use within the portions of Cemetery and Water Gulch FFR Pastures located within the WSA would remain unchanged. In the short term, ongoing voluntary non-use of livestock in both the Castle Rock Pasture of Castle Rock Allotment and the Castle Rock Pasture of DeArmond-Murphy Allotment would likely improve the ecological condition of vegetation and the degree of naturalness of the WSA. Over the long term, decreased maximum allowable utilization levels by livestock in these two pastures would help maintain the improved conditions.

Phase I encroachment areas, as described in Miller et al. 2005, and some site-specific locations that display Phase II western juniper encroachment characteristics, would be subject to treatment following mitigation measures as described in Section 7. Approximately 4,357 acres of the Castle Rock WSA are delineated for prescribed fire treatment of western juniper, although by the very nature of how the species distributes itself over the landscape (particularly as associated with Phase I encroachment areas), notably less than that would be subjected to treatment impacts. Additionally, prior to conducting a prescribed burn treatment of western juniper, and to avoid unnecessary impairment of an area's suitability for preservation as wilderness, fire operational plans would be developed with

applicable mitigation measures as described in Section 7. The fire operational plans would be tailored to the conditions and wilderness characteristics of the proposed prescribed fire location. In Phase II locations, the result would be the appearance of a natural wildfire. While retaining its natural appearance, the intensity of a prescribed fire would determine the extent and duration of remnant standing, scorched western juniper trees, and lower profile vegetation left in place over the short and long term.

Treated western juniper sites would recover with both increased protection and enhancement of diversity and composition of historic native vegetation communities, and the diversity, populations and distribution of wildlife species, their ecological niches, and their associated connectivity within and beyond the WSA. Individually and collectively, these effects protect and enhance important naturalness and supplemental wilderness values of the area and could enhance a visitor's enjoyment of those values. Refer also to Sections 3.2, 4.5, and 4.14 of this document for discussions of the beneficial ecological effects of treating western juniper in the NFMGMA. Over time, the natural ecological conditions and naturalness characteristics of the WSA would be enhanced as a result of selectively reducing the encroachment of western juniper. Mature, older western juniper trees would not be treated and would continue to provide important thermal and protective hiding cover for wildlife. There may be temporary, site-specific disruption of visitors' participation in dispersed recreation activities when project work is being conducted. Overall, the proposed actions under this alternative would result in the retention of outstanding opportunities for solitude and primitive recreation, although in certain specific Phase II encroachment locations, a decreased extent of vegetative screening would be accessible for those visitors desirous of outstanding opportunities for solitude.

The level of visible change in the WSA's landscape settings would be very low. Limiting the size of a given prescribed fire to 320 acres and requiring a natural, blending mosaic appearance within its setting would mitigate visual contrast. While a blackened surface caused by prescribed fire would be apparent, the visual contrast change would be short in duration, typically lasting one to two growing seasons, until vegetation is established in the affected area.

SUMMARY

Results of management actions would be in compliance with the WSA IMP. The WSAs would be managed in a manner to protect and enhance their wilderness characteristics. The proposed uses and projects would meet the non-impairment criteria. Wilderness characteristics would not be so impaired as to preclude the area's suitability for possible congressional designation as wilderness. The WSAs' VRM class I management objective would be met; see also the analysis of visual resources.

Alternative III – WSAs

Impacts on wilderness characteristics of Beaver Dam Creek WSA would be as described under Alternative II. In the Castle Rock WSA, effects of the reconstruction of five springs, maintenance activities of livestock facilities, and changes in livestock grazing would be as described under Alternative II. Vegetation treatment would affect 1,525 acres (25%) of the WSA, a portion of a priority I area for treatment of western juniper located within a 2-mile radius protection buffer of a sage grouse lek (located outside of the WSA). The application of prescribed fire would be as described under Alternative II, and would be in compliance with IMP for vegetative manipulation and fire management. The IMP has no provision for cutting of vegetation as a measure to manage or control a species native to an ecological setting. Thus, the felling of native western juniper, even with applied mitigation measures, would not comply with the IMP. The affected priority I area harbors a mix of Phase I and Phase II western juniper encroachment characteristics. To meet wildlife objectives for sage-grouse associated with the lek, the application of prescribed fire would be substantially restricted. Cutting western juniper as a proposed alternate action in the area would result in the long-term presence of residually apparent wood stumps, with stump density being greatest on landscape settings harboring Phase II characteristics. As a result, cutting of western juniper would adversely impact the primary wilderness characteristic of naturalness within an area representing 25% of the WSA. Western juniper cutting would also adversely impact certain primitive and unconfined recreation activities, another primary wilderness characteristic, by degrading the area's outstanding quality of dispersed recreation activities including, though not limited to, hiking, backpacking, and hunting.

The definition of wilderness in the Wilderness Act includes that the area is undeveloped Federal land that retains its primeval character and influence, which generally appears to have been affected primarily by the forces of nature, with imprints of human work substantially unnoticeable. In FLPMA, Section 603 (c) mandates BLM to manage

lands under wilderness review in a manner that will not impair their suitability for preservation as wilderness. Qualifying treatment of western juniper would help protect and enhance the land's wilderness values by improving the natural interconnected, interdependent ecological values of a fire-dependent regime, thus would not impair a WSA's suitability for possible designation as wilderness. Per the IMP, prescribed fire as a management tool to protect or enhance wilderness values would be permissible, with its affects not impairing the area's suitability for preservation as wilderness. However, cutting of the western juniper would result in an imprint of human activity that would not meet the suitability thresholds of the Wilderness Act and FLPMA. The presence of stumps would not clearly protect or enhance the WSA's wilderness values, and those values would be degraded so far as to significantly constrain the Congress's prerogative regarding the area's suitability for preservation as wilderness.

SUMMARY

There would be no adverse impacts on wilderness values of Beaver Dam Creek WSA. Proposed uses and projects in Castle Rock WSA would be in compliance with the IMP, except for cutting of western juniper. Western juniper cutting would so impair wilderness characteristics of naturalness and outstanding opportunities for primitive and unconfined recreation as to preclude the area's suitability for possible congressional designation as wilderness. The WSA's VRM class I management objective would not be met; see also the analysis of visual resources.

5.12.3 Areas of Critical Environmental Concern (ACECs)

SEORMP ROD OBJECTIVE: Designate areas of critical environmental concern (ACECs)/research natural areas (RNAs) where relevant and importance criteria are met, and special management attention is required to protect the values identified.

NFMGMA AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) OBJECTIVE: Manage areas of critical environmental concern (ACECs)/research natural areas (RNAs), which include Castle Rock ACEC and North Fork Malheur River ACEC, in the NFMGMA, where relevance and importance criteria are met, and special management attention is required to protect the values identified.

Alternative I – ACECs

Current management for all programs and activities maintains the relevant and important values in both ACECs (Castle Rock ACEC and North Fork Malheur River ACEC) in this GMA. These ACECs were designated under current management, and impacts of management to the relevant and important values were analyzed in the SEORMP. The changes that have occurred in the grazing management in the North Fork Malheur River ACEC are showing positive impacts to the vegetative resources as the herbaceous and woody vegetation is increasing in vigor. Current management in Castle Rock ACEC would maintain relevant and important values.

SUMMARY

The objective for management of ACECs would be met under this alternative.

Alternative II – ACECs

Changes in grazing would occur in the Castle Rock Allotment that would have positive impacts to the relevant and important values in the Castle Rock ACEC. These grazing changes would be anticipated to result in improved rangeland conditions, as season of use is changed to better accommodate critical growing season use of the upland grasses and riparian areas. The scenic and wildlife relevant and important values would be enhanced with improved grazing, and vegetative conditions would more nearly approximate those at the time of Native American occupation in this area. One new project, the Jerry Canyon Fence, is proposed, as well as reconstruction of several spring developments. Because biotic and abiotic riparian resources would be improved as a result of these projects, the Castle Rock ACEC would be enhanced, particularly for wildlife values. Western juniper control and forestry practices would conform to prescriptions in the SEORMP for the ACEC, and no negative impacts would accrue to the ACEC. Grazing in North Fork Malheur River ACEC would continue and would maintain the relevant and important values for the ACEC.

SUMMARY

The objective for management of ACECs would be met under this alternative.

Alternative III – ACECs

Three years of grazing use rest proposed for pastures in the Castle Rock Allotment would have positive impacts to the relevant and important values in the Castle Rock ACEC. Improved rangeland conditions would be expected as upland grasses and riparian areas recover vigor during the rest period. Western juniper control and forestry practices would conform to prescriptions in the SEORMP for the ACEC, and no negative impacts would accrue to the ACEC. Grazing in North Fork Malheur River ACEC would continue and would maintain the relevant and important values for the ACEC.

SUMMARY

The objective for management of ACECs would be met under this alternative.

5.13 Energy and Mineral Resources

SEORMP ROD OBJECTIVES 1, 2, AND 3: Provide opportunities for exploration and development of leasable energy and mineral resources while protecting other sensitive resources. Provide opportunities for exploration and development of locatable mineral resources while protecting other sensitive resources. Provide for public demand for saleable minerals from public land while protecting sensitive resources.

NFMGMA ENERGY AND MINERAL RESOURCES OBJECTIVES: Same as SEORMP objectives.

5.13.1 Alternatives I, II, and III - Energy and Mineral Resources

As none of the alternatives propose to restrict opportunities for energy and mineral exploration and development in the landscape area, there would be no adverse impacts to these resources, regardless of the alternative implemented.

SUMMARY

The objectives for energy and mineral resources would be met under all alternatives.

5.14 Lands and Realty

SEORMP ROD OBJECTIVE: Retain public land with high and public resource values. Consolidate public landholdings and acquire land or interests in land with high and public resource values to ensure effective administration and improved resource management in Zone 1.

NFMGMA LANDS AND REALTY OBJECTIVE: Same as SEORMP objective.

5.14.1 Alternatives I, II, and III - Lands and Realty

The acquisition of non-exclusive easements for those portions of roads identified for acquisition would afford BLM, its licensees, and permittees, access to the public lands served by these roads. This would ensure adequate administrative access for the effective administration of these lands. The acquisition of exclusive easements on these road segments would allow the public to use them.

At present, BLM policy does not allow acceptance of assertions of rights under Revised Statute 2477, but this situation is expected to change at some point in the future. If one or more of these road segments identified for acquisition is claimed as a public road by Malheur County through the assertion of rights under Revised Statute 2477, or by some other means, full and free access would be enjoyed by members of the public. BLM has no control over the county's decision to make claims as to the public nature of roads within its boundaries. However, the likelihood of the occurrence of such claims should be a factor in BLM's decision as to whether to attempt to acquire a particular access easement.

SUMMARY

The objective for lands and realty would be met under all alternatives.

5.15 Human Uses and Values

SEORMP ROD OBJECTIVE: Manage public land and pursue partnerships to provide social and economic benefits to local residents, businesses, visitors, and future generations.

NFMGMA HUMAN USES AND VALUES OBJECTIVE: Same as SEORMP objective.

5.15.1 Alternatives I and II - Human Uses and Values

Any changes to public land management in the NFMGMA could affect 11% of the operators and 9% of the active AUMs in MRA. This plan is not proposing any initial reductions in AUMs; however, some operators, following their new grazing schedules, have volunteered to take some non-use through their first grazing rotation. This voluntary non-use would be expected to have little or no impact to the economic value of the livestock industry in Malheur County. Additional expenses may be incurred by individual livestock operators by hiring temporary riders for herding purposes, adding supplements, sharing in the cost of range improvement projects, and providing additional fence maintenance to ensure utilization levels are not exceeded. On the other hand, a slight economic benefit may be realized with implementation of this plan, as it is estimated that approximately \$492,500 will be invested between 2007 and 2016 for project development.

SUMMARY

The objective for human uses and values would be met under Alternatives I and II.

5.15.2 Alternative III - Human Uses and Values

Under this alternative, the expected economic impact would be substantial to those permittees affected by the suspension of grazing use in all pastures where S&Gs were not being met, and current livestock grazing was determined to be the primary cause. Livestock operators would be required to run fewer numbers on public land or to move livestock to other pastures or private land once utilization levels or the pasture objectives have been met. The resumption of livestock grazing in those pastures would only be permitted where there was a reasonable expectation that grazing could occur without setbacks to the recovery of the ecosystem.

Under this alternative, some livestock operators could go out of business. Recreation use may increase in those pastures where livestock grazing has been removed and changes in the habitat improves the hunting, fishing, and other recreational opportunities.

SUMMARY

The objective for human uses and values would not be met under Alternative III.

6 CUMULATIVE EFFECTS OF THE ALTERNATIVES

This section serves to summarize the past, present, and reasonably foreseeable future effects of implementing a particular alternative. The Summaries and Determinations (2003, 2004) and Section 3 (Affected Environment) of this document served to provide the base-line for conditions as a result of past management actions, while the analysis in Section 5 of this document analyzes the effects of the present management and that which would occur if one of three alternatives were selected for the reasonably foreseeable future. Resources present in the GMA were presented, alternatives analyzed, and summary effects presented to indicate if a particular alternative would provide progress toward or meet specific resource objectives.

6.1 *Alternative I*

Rangeland vegetation conditions and grazing use would continue to occur as described in the GMA. Healthy upland range conditions would be maintained in most of the GMA. Ongoing flexibility associated with existing management infrastructure would remain unchanged. Customary permittee grazing practices would be fully maintained, and the financial obligations for BLM and permittees would include normal maintenance or reconstruction of existing projects.

The cumulative effects of existing management practices and infrastructure would result in the attainment of SEORMP objectives for ACECs, special status plants and animals, WSRs, WSAs, and cultural resources because of various mitigating and protective measures. However, current management would fail to attain SEORMP or NFMGMA objectives for riparian/wetland areas, terrestrial wildlife, and aquatic species and habitat due to adverse impacts on riparian and wetland functions. Lack of a comprehensive western juniper treatment program would result in continuing ecological deterioration, as plant communities would tend away from DRFCs as outlined in SEORMP.

6.2 *Alternative II*

The cumulative effects of grazing season adjustments and grazing systems (deferment and rest), additional livestock watering sources, and fences would result in more evenly distributed grazing influences within uplands compared to current management. However, additional livestock water sources would cause some increases in localized disturbance around troughs. The land treatments proposed would temporarily increase some grass forage production available for grazing use and help to restore plant cover diversity. Upland vegetation health would be maintained or improved as a result of season of use and utilization limits. Grazing use would be allowed at seasons and intensities consistent with maintenance and protection of upland vegetation. Limitations to grazing use caused by riparian concerns would be accomplished by some stream corridor or exclusion fencing, but riparian concerns would primarily be addressed by new pasture subdivisions, adjustments in seasons of grazing use, and grazing systems that allow for plant regrowth, deferment, and periodic rest.

A reasonable level of livestock management flexibility and sustained forage availability would be provided to permittees. Customary permittee grazing practices would be changed in order to protect riparian/wetland and upland vegetation health. Financial commitments necessary to implement the alternative would be secured by BLM as funding becomes available, and through cooperation with grazing permittees. Additional funding sources would be sought through grant application to the Oregon Watershed Enhancement Board (OWEB) and by the Malheur Grazing Advisory Board.

As described in the analysis for Rangeland/Grazing Use, grazing systems prescribed for the Calf Creek and Beulah Allotments are very complex and will require the utmost diligence on the part of the permittee(s) to successfully implement them. The complexity of these systems is a result of the combination of resource constraints and lack of flexibility available in the existing livestock grazing operations. While the grazing system in the Agency Mountain Allotment is less intensive than either Calf Creek or Beulah Allotments, all three allotments exhibit indications that current livestock stocking rates/AUM allocations are near or past the threshold of long-term sustainability when factors such as drought, topography, western juniper encroachment, riparian management, and other resource issues are taken into account. Despite these observations of the IDT, BLM currently lacks sufficient data that would

adequately support a reduction in permitted use. Resource Area staff anticipate that monitoring may indicate the need for adjustment in permitted use within these allotments through the adaptive management process.

The cumulative effects of proposed management actions would result in progress toward the attainment of SEORMP and NFMGMA objectives for ACECs, special status plants and animals, soil, water, and riparian/wetland areas, wildlife and wildlife habitats, aquatic species and habitat, WSRs, WSAs, and cultural resources, because of grazing schedule and project design, in addition to various mitigating and protective measures as discussed in the analysis in Section 4.

6.3 *Alternative III*

This alternative would differ greatly from the current situation and result in substantial reductions in forage availability for livestock. Upland vegetation health would be protected because of the 3-year rest period in pastures where S&Gs were not met due to current livestock grazing. Grazing use would be allowed in remaining pastures at seasons and intensities consistent with maintenance and protection of upland and riparian vegetation. Limitations to grazing use caused by riparian concerns would be accomplished by some stream corridor fencing, but riparian concerns would primarily be addressed by adjustments in seasons of grazing use. A diminished level of livestock management flexibility and sustained forage at a much reduced level would be provided to permittees. Customary permittee grazing practices would be substantially changed. A significant number of livestock operations may cease to exist as viable enterprises.

The cumulative impacts of this alternative would result in a high level of protection of resource values very similar to what has been described for Alternative II but at a higher level, because of diminished grazing use influences and periods of grazing rest for 3 years in pastures not currently meeting standards. However, the greatly reduced level of western juniper treatments would result in diminished ecological values across the landscape as western juniper invasions continue to displace other native species.

7 MITIGATING MEASURES

7.1 Best Management Practices

Appendix 0 (“Best Management Practices”) of the SEORMP ROD will be adhered to.

7.2 Visual Resources and Motorized Vehicle Use

When implementing approved management actions in the NFMGMA, motorized vehicles will be used in a manner to minimize soil erosion and compaction, undue rutting to travel and traveled surfaces, and impacts to vegetation. Approved cross-country motorized travel to implement approved actions will be limited to non-saturated soil conditions. In areas with a limited type of OHV use designation, all approved cross-country motorized travel will be temporary, that is, conducted only as needed to implement approved actions. Surface disturbance caused by approved cross-country motorized travel to implement management actions will be reclaimed as an element of the approved activity. Reclamation will include, as needed, eliminating visual evidence of vehicle use and successful seeding and/or planting of the traveled surface with native species of the area. Additionally, such temporary cross-country travel routes will be appropriately bermed or otherwise blocked at their junctions with currently existing roads, and/or OHV posted as closed, to prevent unauthorized motorized vehicle travel.

Refer also to mitigation measures for WSAs and the North Fork Malheur Study River. Motorized travel for all uses and management actions within the North Fork Malheur River ACEC is limited to designated routes. Within a designated VRM class I area, effects of any specifically approved cross-country motorized travel or other management action must not attract attention upon completed mitigation measures, unless the net affect of approved actions protects and enhances wilderness values or is a “grandfathered” livestock grazing project, or, for the North Fork Malheur Study River, protects its outstandingly remarkable values.

In special management areas with a VRM class I designation, the felling of individual younger western junipers (predominately less than 88 inches in diameter at ground level) must be with one single trunk cross cut, always flush at the ground level (flush cut). The downed trees will either be removed from the special management area, or be burned in place individually, or hand piled and then burned. Lower limbs may be cut only if required for safe falling practices and then only to the minimum necessary. Complete burning of felled trees is the objective and is to occur no later than 2 years after being felled, to allow for optimal drying of the tree with needles still attached facilitating adequate burn. Burning must leave no residual visual evidence of a saw’s cross cut on downed trees and their limbs.

When implementing approved actions within VRM class II areas, approved cross-country motorized vehicle use and reclamation of that use, as well as other approved management actions, may be noticed but should not attract the attention of a casual observer. Within the Castle Rock ACEC, no cross-country travel by motorized vehicles will be authorized within the 500 foot wide corridor (250 feet either side) of the Castle Rock Road (BLM road number 7350-0-00). Also within this road corridor, where not retained for visual vegetative screening, vegetation treatment will be limited to younger western juniper located outside of the WSA and will employ flush cut techniques described above. Elsewhere within this ACEC, and/or wherever an area has a VRM class II classification or an OHV-limited use designation, any authorized cross-country motorized travel will be limited to needs associated with the reconstruction and maintenance of existing springs, vegetation treatments, the construction of approved new fences and maintenance of existing fences, reseeding, and the maintenance or reclamation of existing earthen reservoirs. For fence construction/maintenance and the treatment of woody vegetation within the Castle Rock ACEC and other designated VRM class II locations, the location/alignment of approved cross-country motorized travel routes will preclude mechanical clearing of vegetation or blading for that travel, with vehicle use limited to all-terrain vehicles (ATVs) unless otherwise site-specifically approved in order to provide for the safety of a vehicle operator.

7.3 Rangeland Vegetation

Appendix S (Standard Implementation Features and Procedures for Rangeland Improvements) of the SEORMP ROD will be adhered to.

7.4 Special Status Plant Species

Special status plant surveys will be conducted prior to all surface disturbing activities and project installations. Project location adjustments necessary to avoid site specific adverse impacts to special status plants will be accommodated.

7.5 Water Resources and Riparian/Wetlands and Aquatic Species and Habitats

Project development in riparian/wetland areas will follow SEORMP ROD Appendix O (BMPs) criteria to minimize disturbance and maximize potential for project success. Adequate buffer distances will be implemented to protect riparian areas and stream channels from potential erosional impacts of land treatments and construction of fences.

7.6 Wildlife and Wildlife Habitat and Special Status Animal Species

BLM will continue to monitor habitat conditions in NFMGMA, and ODFW will continue to monitor sage grouse population status. Existing rangeland vegetation monitoring will be supplemented with appropriate additional studies in accordance with SEORMP ROD (Appendix W, Monitoring), to document success or failure in meeting NFMGMA resource objectives.

The NFMGMA activity plan level Terrestrial Wildlife Objective and the SEORMP ROD objective that specifies a 30% threshold for grassland habitat in MRA (ROD, page x) will significantly limit the amount, type, and location of further fragmentation from BLM initiated land treatments. Less than 25% (26,000 acres) of the Wyoming and basin big sagebrush habitats may appear as grasslands under the NFMGMA Terrestrial Wildlife Objective.

Land treatment will be completed at least two to four miles from existing leks so that most potential adverse nesting habitat impacts may be avoided in accordance with OR/WA BLM and WAFWA management guidelines, with the exception of western juniper treatments (restoration), which may occur before March 1 or after June 15.

Where necessary, allow land treatments in native rangeland as long as the combined amount of disturbance resulting in grassland conditions does not exceed 30% to 40% of any NFMGMA pasture unit.

Minimize the geographic extent of grassland habitats that occur in large blocks (320 acres or more). Within a two mile radius of sage grouse leks, habitat restoration resulting in grassland conditions (western juniper treatment) in Wyoming big sagebrush habitats should not exceed more than 20% of the available breeding habitat in a 30 year period. Additionally, in mountain big sagebrush habitats, habitat restoration resulting in grassland conditions should not exceed more than 20% of the available breeding habitat in a 20 year period (potentially less in both big sagebrush habitats if the desired nesting cover recovery of approximately 10 -15% canopy cover or more is attained prior to the end of the period). All prescribed fire treatments will be applied to provide a mosaic of burned and unburned vegetation so that cover and connectivity is maintained at the pasture scale.

New livestock management fences will be located at least 0.6 miles from leks according to BLM and WAFWA management guidelines.

All new livestock water sources will be located more than 0.6 miles from leks to avoid potential livestock disturbances during the sage grouse strutting season.

Livestock salting and mineral supplement stations will be placed at least 0.25 mile from leks to avoid drawing livestock into centers of sage grouse breeding activity.

Livestock trailing onto public land during turnout and trailing among pastures between March 1 and April 30 will be routed in a manner that avoids direct overlap of livestock and sage grouse breeding activities.

Livestock management fences will be constructed in a way that allows for freedom of movement for elk, mule deer, and pronghorn and minimizes potential for injury or mortality. In accordance with BLM Manual Handbook H-1741-1, interior allotment fences will conform to the following material and spacing requirements: top strand – barbed wire - no higher than 38”; second strand – barbed wire at 26”; bottom strand – smooth wire at 16”.

New fencing will be flagged temporarily to help diminish incidence of wildlife and fence collisions.

Wildlife escape ramps will be installed in new and existing livestock water tanks to minimize the potential for avian and other small animal drowning mortalities.

7.7 Rangeland/Grazing Use Management

Appendix S (Standard Implementation Features and Procedures for Rangeland Improvements) of the SEORMP ROD will be adhered to.

7.8 Wilderness Study Areas

Uses, facilities and project work, and their associated impacts to wilderness values of Beaver Dam Creek and Castle Rock WSAs will be mitigated to insure compliance with Wilderness Interim Management Policy for Lands Under Wilderness Review (IMP, BLM Handbook H-8550-1). The IMP requires all proposals for uses and/or facilities to not impair wilderness values by degrading them so far as to significantly constrain Congress' prerogative regarding the area's suitability for preservation as wilderness. When performing specific activities in WSAs or allowing proposed actions to occur, it is necessary to comply with IMP's non-impairment standard (Chapter I. B.2). Policy for specific activities conducted in WSAs is described in Chapter III of the IMP. Uses and/or facilities found to be non-impairing to wilderness values may be permitted; if impairing, the uses and/or facilities are denied. In accordance with the FLPMA, the IMP states that certain "grandfathered" uses, such as livestock grazing, mining, and mineral leasing, may continue in the same manner and degree as they were occurring on October 21, 1976 (the date FLPMA became law), even if they are impairing to wilderness values.

For this NFMGMA plan, proposed actions that are affected by IMP policy for specific activities include watershed rehabilitation and vegetative manipulation, rangeland management, wildlife, recreation, and fire management. Examples of proposed uses and facilities in the affected two WSAs include, but are not limited to, recreational use and enjoyment of wilderness values; livestock grazing, including associated support facilities; facilities design, installation and maintenance; protection of a special status animal species; methods of woody vegetation treatment; and methods of project/facility access. The following mitigation measures would be applied to approved activities and facilities project work.

Treatments of vegetation will be limited to western juniper within identified western juniper treatment areas. Of the two WSAs in the NFMGMA, the treatment of vegetation would occur only in the Castle Rock WSA. There would be no whole-scale elimination of western junipers within a juniper treatment area. Older western juniper and some existing dense stands of young western juniper will not be treated, so as to provide adequate thermal and cover protection for wildlife species and to sufficiently mitigate visual contrast of treatment actions. Western juniper treatment will be precluded on rocky-dominated ridgelines and elevated points and their immediate environs, on rock spree/talus slope sites, and in locations where the trees' presence do not directly affect other resource management objectives which are consistent with IMP direction.

Western juniper treatment would be limited to Phase I and Phase II western juniper encroachment areas (Miller et al. 2005) within the WSA. Within all priority treatment areas (of Phase I or Phase II encroachment areas), treatment will be limited to prescribed broadcast burning (this is substantially restricted by wildlife habitat objectives and mitigation measures discussed in the wildlife sections of this document). A specific prescribed burn area will be no greater than 320 acres. Treated western juniper sites will result in a natural mosaic appearance, with the vegetative boundary of a treatment site having a natural appearing transitional blend with its landscape setting, so as to preclude visually abrupt horizontal or vertical linear contrasts. No treatment of priority 4 western juniper sites would occur within the Castle Rock WSA. No treatments would occur within Phase III western juniper areas.

Under the IMP, livestock developments existing on October 21, 1976, may continue to be used and maintained in usable condition. Access will be limited to non-motorized methods for maintenance of existing pasture/allotment fences and enclosure fences for springhead protection at the five reconstructed spring sites. All surface-disturbing activities will be kept to a minimum in scope and area. Where there is presently no designated motorized vehicular way (per BLM wilderness review inventory records and SEORMP ROD) to an existing developed spring site, cross-country travel by a motorized vehicle for spring reconstruction work will be limited to one round trip of a non-

tracked backhoe/front loader, conducted during dry soil conditions. Any surface disturbance associated with cross-country motorized vehicle travel or on an existing designated vehicular way to an existing developed spring site will be limited to the minimum necessary for safe passage. Any reconstruction materials or equipment unable to be transported cross-country to the project site via the vehicle's single round trip will be airlifted to/from the project site. Fence post materials and their color, troughs, and spring heads will be installed in a manner to minimize visual impacts. Pipelines will be buried. Spring project sites will be reclaimed to as natural a setting as possible. As needed, the use and placement of natural materials and features of the area will be employed to minimize visual impacts and to optimize visual screening. At the time of project implementation, surface disturbances caused by spring reconstruction activities and the site's motorized vehicle access route, if not a designated vehicular way, will be reclaimed to a natural contoured appearance; any damaged woody vegetation, such as sagebrush, will be widely scattered or burned; then the disturbed area will be seeded and/or planted with native species typical of the project's setting. Any required reseeding/replanting of surface-disturbed locations to achieve sufficient vegetation survival of reclaimed surfaces to appear substantially unnoticeable within its landscape setting, will be performed within two growing seasons after the original project/reclamation work and annually thereafter as required. Access for maintenance of a spring's trough, springhead, or pipeline may allow for cross-country motorized vehicle travel (where no designated vehicular way exists) if determined that the vehicle itself is the minimum tool necessary to perform a specific maintenance task. Associated site/access route rehabilitation will be performed as described above. Directly following spring reconstruction/maintenance, physical natural barriers at the WSA boundary and/or posted signs indicating the WSA boundary and no motorized vehicle travel, will be strategically placed as needed to prevent unauthorized vehicle entry into the WSA.

7.9 Wild and Scenic Study River

Actions affecting the identified ORVs of the administratively suitable 3.6-mile-long corridor of BLM-administered public lands of the North Fork Malheur Study River (with a tentative classification of "wild") will be mitigated as needed to be in compliance with BLM Manual 8351, "Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation and Management". River values must be protected and to the extent practical, enhanced. Within the half-mile wide interim management study river corridor, project work will be limited to maintenance of existing fences by non-motorized methods where fences are located away from the area's designated roads, and vegetation treatment of western juniper, mitigated as follows.

Western juniper treatment will be limited to that portion of the river's corridor within the North Rock Pile Pasture of the Castle Rock Allotment, which is located within a priority 1 treatment area that exhibits characteristics of a Phase I encroachment of western juniper. Western juniper specimens will not be treated along the river's bank, on rocky-dominated ridgelines and elevated points and their immediate environs, on rock spree/talus slope sites, or where the trees' presence do not directly impact other resource management objectives. Older western juniper will not be treated in order to provide adequate thermal and cover protection for wildlife species and to sufficiently mitigate visual contrast of treatment actions. In the remainder of this pasture's area within the river's interim management corridor, the treatment of western juniper will be limited to (1) flush cutting at ground level, followed by either removal from the interim management corridor or (2) by individual cutting and/or hand-piling then burning, in order to meet sage grouse habitat guidelines. To meet guidelines prescribed broadcast burning within priority 1 areas is substantially limited for management of sage grouse breeding and nesting habitats. Lower limbs may be cut to the extent required for safe falling practices. Complete burning of felled trees will occur no later than 22 years after felling to allow for optimal drying of the tree but with needles still attached to facilitate adequate consumption. Burning must leave no residual visual evidence of a saw's cross cut on downed trees and their limbs. Treated western juniper sites will result in a natural mosaic appearance, with the vegetative boundary of a treatment site having a natural appearing transitional blend with its landscape setting, to preclude visually abrupt horizontal or vertical linear contrasts. Motorized vehicle travel associated with all activities will be limited to the designated roads of the North Fork Malheur River ACEC.

7.10 Cultural Resources

Cultural resource surveys will be conducted prior to all surface disturbing activities and project installations. Project location adjustments necessary to avoid site-specific adverse impacts to cultural resources will be accommodated.

8 MONITORING

Monitoring methods will be in accordance with approved BLM protocols identified in Appendix W, “Monitoring”, of the SEORMP ROD (2002).

9 PERSONS AND AGENCIES CONSULTED

9.1 Permittees

Operator # 3603151
Operator # 3603431
Operator # 3603154
Operator # 3603119
Operator # 3603103
Operator # 3603102
Operator # 3603128
Operator # 3603105
Operator # 3603118
Operator # 3603430
Operator # 3603121
Operator # 3600205
Operator # 3603215
Operator # 3603130
Operator # 3603260
Operator # 3603038
Operator # 3603153
Operator # 3601553
Operator # 3601545

9.2 Cooperating Agencies

Walt Van Dyke, Ontario District Office, Oregon Department of Fish and Wildlife
Ray Perkins, Oregon Department of Fish and Wildlife
Marisa Meyer, US Fish and Wildlife Service, LaGrande Office

9.3 Interested Publics

Dean Adams, in c/o Tribal Chair, Burns Paiute Tribe
Antone Minthorn, Tribal Chair, Confederated Tribes of the Umatilla Indian Reservation
Katie Fite, Committee for Idaho's High Desert
Jim Shake, Oregon Natural Desert Association, and Western Watersheds Project
Bob Moore, Oregon Natural Desert Association, and Western Watersheds Project
Gene Bray, Western Watersheds Project
Jon Marvel, Western Watersheds Project
Bill Marlett, Oregon Natural Desert Association

9.4 Local/County Entities

Jennifer Martin, Owyhee Watershed Council
Carl Hill, Owyhee Watershed Council
Owyhee Watershed Council
Bob Kindschy, retired BLM and Southeast Oregon Resource Advisory Council member
Dan Joyce, Malheur County Judge

9.5 Bureau of Land Management Interdisciplinary Staff

Bob Alward, Wilderness and Recreation, Wild and Scenic Rivers - Retired
Ron Rembowski, Rangeland Management Specialist - Retired
Brandon Knapton, Terrestrial Wildlife and Special Status Animals
Diane Pritchard, Cultural Resources

Cynthia Tait, (former) Fisheries, Aquatic Species and Habitat Biologist
Shaney Rockefeller, Soils, Riparian Resources, Biological Crusts, Water Resources
Jean Findley, Special Status Plants, ACECs
Jon Westfall, Energy and Minerals
Lynne Silva, Weeds
Brent Grasty, GIS Specialist
Marissa Theall, GIS Specialist
Jon Freeman, (former) Lands and Realty Specialist
Tom Hilken, (former) Supervisory Natural Resource Specialist
Pat Ryan, Field Manager

10 REFERENCES

- Adovasio, James M. 1970. The origin, development and distribution of western archaic textiles. *Tebiwa: Journal of the Idaho State University Museum* 13(2): 1-40.
- Agee, J. K. 1993. *Fire Ecology of Pacific Northwest Forests*. Washington, DC: Island Press.
- Aikens, C. Melvin. 1993. *Archaeology of Oregon*. Portland, Oregon: U.S. Department of Interior, Bureau of Land Management, Oregon State Office.
- Altman, R., and A. Holmes. 2000. *Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington*. Oregon-Washington Partners in Flight and Point Reyes Bird Observatory, PRBO Conservation Science, Stinson Beach, CA.
- Australia. Aitkenvale, Queensland. Proceedings of the VI International Rangelands Congress. 1999. *Biological soil crusts: natural barriers to Bromus tectorum L. establishment in the northern Great Basin, USA*.
- Australia. Aitkenvale, Queensland. Proceedings of the VI International Rangelands Congress. 1999. *Fire and Herbicides for Exotic Annual Grass Control: Effects on Native Plants and Microbiotic Soil Organisms*.
- Barney, M. A., and N.C. Frishknecht. 1974. Vegetation changes following fire in the pinyon-juniper type of west-central Utah. *Journal of Range Management* 27:91-96.
- Bedwell, Stephen F. 1973. *Fort Rock Basin Prehistory and Environment*. Eugene, Oregon: University of Oregon Press.
- Blaisdell, J. P., and J. Pechanec. 1949. Effects of herbage removal at various dates on vigor of bluebunch wheatgrass and arrowleaf balsamroot. *Ecology* 30(3): 298-305.
- Brimlow, George F. 1938. *The Bannock Indian War of 1878*. Caldwell, Idaho: Caxton Printers.
- Brown, J. K. 1955. *Fire regimes and their relevance to ecosystem management*. Proceedings of Society of American Foresters National Convention, Anchorage, 18-19 September.
- Buchanan, D., M. Hanson, and R. Hooton. 1997. *Status of Oregon's Bull Trout*. Portland, Oregon: Oregon Department of Fish and Wildlife.
- Bull, E., and M. Hayes. 2000. The effects of livestock on reproduction of the Columbia spotted frog. *Journal of Range Management* 53:291-294.
- Burkhardt, J. W., and E. W. Tisdale. 1969. Nature and successional status of western juniper vegetation in Idaho. *Journal of Range Management* 22:264-270.
- Burns Paiute Tribe. FY1999 Annual Report. *Malheur River Basin Cooperative Bull Trout/Redband Research Project*. Burns, Oregon: Burns Paiute Tribe.
- Clark, P. E., W. C. Krueger, L. D. Bryant, and D. R. Thomas. 1998. Spring defoliation effects on bluebunch wheatgrass: I. Winter forage quality. *Journal of Range Management* 51 (September):519-525.
- Cochran, P. H., J. M. Geist, D. L. Clemens, R. R. Clausnitzer, and D. C. Powell. 1994. Suggested stocking levels for forest stands in Northeastern Oregon and Southeastern Washington. *Research Note PNW-RN-513*. Portland: U.S. Department of Agriculture, Forest Service. Pacific Northwest Research Station.

- Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. *Wildlife Society Bulletin* 28:967-985.
- Cook, C. Wayne and R. Dennis Child. 1971. Recovery of desert plants in various states of vigor. *Journal of Range Management* 24 (5): 339-343.
- Cottam, W. P. and G. Stewart. 1940. Plant succession as a result of grazing and of meadow desiccation by erosion since settlement in 1862. *Journal of Forestry* 38:613-625.
- Craighead, J. C., and F. C. Craighead. 1969. *Hawks, Owls, and Wildlife*. New York: Dover Publications.
- Crawford, John A., Rich A. Olson, Neil E. West, Jeffrey C. Moseley, Michael A. Schroeder, Tom D. Whitson, Richard F. Miller, Michael A. Gregg, and Chad S. Boyd. 2004. Synthesis paper: ecology and management of sage grouse and sage grouse habitat. *Journal of Range Management* 57:2-19.
- Currens, K. 1994. Genetic analysis of rainbow trout (*Oncorhynchus mykiss*) from the Malheur and Owyhee Rivers. *OCFRU Genetics Laboratory Report 94(1)*.
- Currens, K. 1996. Genetic variation of rainbow trout from the Snake River and Harney basins *OCFRU Genetics Laboratory Report 96(1)*.
- d'Azevedo, Warren L. ed. 1986. *Handbook of North American Indians*. Volume 11, Great Basin. Washington DC: Smithsonian Institution.
- Donart, Gary B. 1969. Carbohydrate reserves of six mountain range plants as related to growth. *Journal of Range Management* 22 (6): 411-415.
- Engle, J. 2001. "Population biology and natural history of Columbia spotted frogs (*Rana luteiventris*) in the Owyhee uplands of southwest Idaho and implications for monitoring and management." Masters thesis, Boise State University.
- Fagan, John L. 1974. "Altithermal occupation of spring sites in the Northern Great Basin." University of Oregon Anthropological Papers No. 6.
- Fiebelkorn, Robin B., George W. Walker, Norman S. MacLeod, Edwin H. McKee, James G. Smith. 1983. Index to K-Ar determinations for the State of Oregon. *Isochron/West* 37: 60
- Hanes, Richard. 1988. "Lithic assemblages of Dirty Shame Rock Shelter, changing traditions in the Northern Intermontane." University of Oregon Anthropological Papers No. 40.
- Hann, W. J., and D. L. Bunnell. 2001. Fire and land management planning and implementation across multiple scales. *International Journal of Wildland Fire* 10:389-403.
- Hardy, C. C., K. M. Schmidt, J. M. Menakis, and N. R. Samson. 2001. Spatial data of national fire planning and fuel management. *International Journal of Wildland Fire*. 10:353-372.
- Heady, H. F., and J. Bartolome. 1977. The Vale rangeland rehabilitation program: the desert repaired in southeastern Oregon. *U.S. Department of Agriculture, Forest Service, Resource Bulletin PNW-70*.
- Holechek, J. L. 1988. An approach for setting the stocking rate. *Rangelands* 10(1):10-14.
- Holechek, J. L., H. Gomez, F. Molinar, and D. Galt. 1999. Grazing studies: what we've learned. *Rangelands* 21(2):12-16.
- Holmes, A., and D. Barton. 2003. Determinants of songbird abundance and distribution in sagebrush habitats of eastern Oregon and Washington. *Point Reyes Bird Observatory Contribution # 1094*.

- Howard, A. K. 2000. "The effects of cattle grazing on Columbia spotted frogs (*Rana luteiventris*) in the Owyhee Mountains, Idaho." Masters thesis, Boise State University, Boise, Idaho.
- Johansen, J. R. 1993. Cryptogammic crust of semiarid and arid lands of North America. *Journal of Psychology* 29: 140-147.
- Kaltenecker, J. H. 1997. "The recovery of microbiotic crusts following post-fire rehabilitation on rangelands of the western Snake River Plain." Unpublished thesis, Boise State University, Boise, Idaho.
- Karl, M. G., and S. G. Leonard. 1996. "Western juniper (*Juniperus occidentalis* ssp. *occidentalis*) in the Interior Columbia Basin and portions of the Klamath and Great Basin: Science Assessment." Review draft. Interior Columbia Basin Ecosystem Management Project, Science Integration Team, Terrestrial Staff Range Task Group, Walla Walla, WA.
- Knick, S. T. 1996. New concepts in landscape ecology for managing wildlife on rangelands. *Sustaining Rangeland Ecosystems. Special Report* 953:17-23.
- Maser, C. 1984. Wildlife habitats in managed rangelands - the Great Basin of Southeastern Oregon. *General Technical Reports*, Portland: U.S. Department of Agriculture, Forest Service. Pacific Northwest Research Station.
- McAdoo, J. 1989. Nongame bird community responses to sagebrush invasion of crested wheatgrass seedings. *Journal of Wildlife Management* 53(2):494-502.
- Mehring, Peter J. Jr. 1990. Volcanic ash dating of the Clovis Cache at East Wenatchee, Washington. *National Geographic Research* 6(4):495-503.
- Miller, R. F., and J. A. Rose. 1998. Fire history and *Juniperus occidentalis* Hook. encroachment in *Artemisia* steppe. *American Midland Naturalist*.
- Miller, R. F., J. Bates, T. Svejcar, F. Pierson, and L. Eddleman. 2005. Biology, ecology, and management of western juniper. *Oregon State University Technical Bulletin* 152.
- Mueggler, W. F. 1967. Response of mountain grassland vegetation to clipping in southwest Montana. *Ecology* 48:942-949.
- Mueggler, W. F. 1970. Influence of competition on the response of Idaho fescue to clipping. *U.S. Department of Agriculture, Forest Service Research Paper* INT-73.
- Mueggler, W. F. 1975. Rate and pattern of vigor recovery in Idaho fescue and bluebunch wheatgrass. *Journal of Range Management* 28(3) 198-204.
- Munger, J., A. Ames, and B. Barnett. 1997. 1996 Survey for Columbia spotted frogs in the Owyhee Mountains of southeastern Idaho. *Idaho BLM Technical Report* 97-13.
- Muntzert, James K., and Cyrus W. Field. 1969. Geology and mineral deposits of the Brattain District, Lake County, Oregon. *Special Paper - Geological Society of America*: 616-617.
- National Geographic, 1988. Clovis cache found: weapons of ancient Americans. *National Geographic* 174(4): 500-503.
- Oregon Department of Fish and Wildlife. 2006. *Malheur River Bull Trout Population Status*. Southeast Fisheries District, Hines, OR.

- Oregon Natural Heritage Information Center. 2004. *Rare, threatened and endangered species of Oregon*. Oregon Natural Heritage Information Center, Oregon State University, Portland, Oregon.
- Oregon Water Resources Board. 1969. *Oregon's Long Range Requirements for Water, Appendix I-10, Malheur Drainage Basin*.
- Orr, Elizabeth L., William N. Orr. 1999. The other face of Oregon; the geologic processes that shape our state. *Oregon Geology* 61 (6): 131-138, 143-150.
- Paige, C., and S. A. Ritter. 1999. Birds in a sagebrush sea: managing sagebrush habitats for bird communities. *Partners in Flight Western Working Group*. Boise, ID.
- Patla, D. 1997. "Changes in a Population of Spotted Frogs in Yellowstone National Park Between 1953 and 1995: The Effects of Habitat Modification." Masters thesis, Idaho State University, Pocatello, Idaho.
- Ponzetti, J. M., and B. P. McCune. 2001. Biotic soil crust of Oregon's shrub steppe: community composition in relation to soil chemistry, climate, and livestock activity. *The Bryologist* 104(2): 212-225.
- Reynolds, T. D., and C. H. Trost. 1980. The response of native vertebrate populations to crested wheatgrass planting and grazing by sheep. *Journal of Range Management* 33: 122-125.
- Robyn, T. L. 1977. "Origin of a Continental Calc-Alkaline Volcanic Suite CCAVS, NE Oregon." Meeting of The Geological Society of America, 90th annual meeting, Seattle, 7-9 November.
- Schmidt, K. M., J. M. Menakis, C. C. Hardy, W. J. Hardy, and D. L. Bunnell. 2002. Development of course-scale spatial data for wildland fire and fuel management. *Gen. Tech. Rep., RMRS-GTR-87*. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- State of Oregon. 2003. *State-Wide Water Quality Management Plan, Beneficial Uses, Policies, Standards, and Treatment Criteria for Oregon*. OAR, Chapter 340, Division 041.
- Stewart, O. C. 1939. The Northern Paiute Bands. *University of California Anthropological Record*.
- Stoddart, L., A. Smith, and T. Box. 1955. *Range Management*. New York: McGraw-Hill.
- Szaro, R. C., S. Belfit, J. Aitkin, and J. Rinne. 1985. "Impact of Grazing on a Riparian Garter Snake." Symposium, Riparian Ecosystems and their Management: Reconciling Conflicting Uses, Tuscon, 16-18 April.
- Thayer, Thomas Prence. 1957. Some relations of later Tertiary volcanology and structure in eastern Oregon. *Vulcanologia del Cenozoico* 1: 231-245.
- Thayer, T. P., and C. E. Brown. 1964. Pre-Tertiary orogenic and plutonic intrusive activity in central and northeastern Oregon. *Geological Society of America Bulletin* 75 (12): 1255-1262.
- Thomas, J. W., and C. Maser, eds. 1984a. Wildlife habitats in managed rangelands - the Great Basin of Southeastern Oregon. *General Technical Reports*, Portland: U.S. Department of Agriculture, Forest Service. Pacific Northwest Research Station.
- Tuellar, P.T. ed. 1988. Vegetation science applications for rangeland analysis and management. *Handbook of Vegetation Science*, Volume 14.
- Trainer, C. E., J. Lemos, T. P. Kistner, W. C. Lightfoot, and D. E. Towel. 1981. Mortality of mule deer fawns in Southeastern Oregon, 1968-1979. *Wildlife Research Report 10*. Oregon Department of Fish and Wildlife.
- U.S. Department of Agriculture, Forest Service, Region 6. 1993. *Interim Old Growth Definition for Douglas fir Series, Grand Fir/White Fir Series, Interior Douglas fir Series, Lodgepole Pine Series, Pacific Silver Fir*

Series, Ponderosa Pine Series, Port-Orford-cedar and Tanoak (Redwood) Series, Subalpine Fir Series, Western Hemlock Series. Portland: USDA Forest Service, Pacific Northwest Region.

- U.S. Department of the Interior, Bureau of Land Management. 1977. *Soil Survey of Ironside Environmental Impact Statement Area: Selected Areas Within Baker and Malheur Counties, Oregon : Survey and Report.* Albuquerque, N.M.
- U.S. Department of the Interior, Bureau of Land Management. 1980a, 1980b, and 1982. *The Ironside Environmental Impact Statement and Rangeland Program Summary.* Vale District BLM, Vale, OR.
- U.S. Department of the Interior. 2000. *Interior Columbia Basin Final Environmental Impact Statement: Proposed decision.*
- U.S. Department of the Interior, Bureau of Land Management. 1989. *Fencing.* BLM Manual Handbook H-1741-1.
- U.S. Department of the Interior, Bureau of Land Management. 1989. *Oregon National Historic Trail Management Plan.* Vale District BLM, Vale, OR.
- U.S. Department of the Interior, Bureau of Land Management. 1990. *The Juniper Resources of Eastern Oregon.* Information Bulletin OR-90-166. U.S. Department of Agriculture, Bureau of Land Management.
- U.S. Department of the Interior, Bureau of Land Management. 1991. *Wilderness Study Report. Volume 1.* Oregon State BLM Office, Salem, Oregon.
- U.S. Department of the Interior, Bureau of Land Management. 1993. *Process for Assessing Proper Functioning Conditions.* Technical Reference 1737-9.
- U.S. Department of the Interior, Bureau of Land Management. 1995. *Interim Management Policy for Lands Under Wilderness Review.* Publication H-8550-1.:Denver, Colorado.
- U.S. Department of the Interior, Bureau of Land Management. 1996. *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration.* 43CFR4180.1. Washington, DC: United States Government Printing Office.
- U.S. Department of the Interior, Bureau of Land Management. 1996. *Utilization Studies and Residual Measurements.* Interagency Technical Reference 1734-4: Denver, Colorado.
- U.S. Department of the Interior, Bureau of Land Management. 1997. *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington.*
- U.S. Department of the Interior, Bureau of Land Management. 2000. *Interpreting Indicators of Rangeland Health.* Technical Reference 1736-4: Denver, Colorado.
- U.S. Department of the Interior, Bureau of Land Management. 2001. *Biological Soil Crusts: Ecology and Management.* Technical Reference 1730-2: Denver, CO.
- U.S. Department of the Interior, Bureau of Land Management. 2001. *Rangeland Health Standards.* Handbook H-4180-1: Denver, Colorado.
- U.S. Department of the Interior, Bureau of Land Management. 2001. *Southeastern Oregon Resource Management Plan Final Environmental Impact Statement.* Vale District BLM Office, Vale, Oregon.
- U.S. Department of the Interior, Bureau of Land Management. 2002. *Southeastern Oregon Resource Management Plan and Record of Decision.* Vale District BLM Office, Vale, Oregon.

- U.S. Department of the Interior, Bureau of Land Management. 2003, 2004. *North Fork Malheur Geographic Management Area Standards of Rangeland Health Determinations*. Vale District BLM Office, Vale, Oregon.
- U.S. Department of the Interior, Bureau of Land Management. 2005. *Monitoring Streambanks and Riparian Vegetation - Multiple Indicators*. Technical Bulletin 2005-02.
- U.S. Department of the Interior, Bureau of Land Management. 2006. 43CFR4100. Grazing administration. *Federal Register* Vol. 71, No. 133.
- Vasek, F. C., and R. F. Thorne. 1977. Transmontane coniferous vegetation. In: Barbour, M.G.; Majors, J. eds. *California Native Plant Society Special Publication No. 9. Terrestrial vegetation of California*.
- Walker, Jr., Deward E. ed. 1998. *Handbook of North American Indians*. Volume 12, Plateau. Washington DC: Smithsonian Institution.
- Weiss, N. N., and B. J. Verts. 1984. Habitat and distribution of pygmy rabbits (*Sylvilagus idahoensis*) in Oregon. *Great Basin Naturalist* 44(4): 563-571.
- Welch, B. L., and C. Criddle. 2003. Countering misinformation concerning big sagebrush. *USDA Research Paper RMRS-RP-40, Rocky Mountain Research Station*.
- West, N. E. 1984. Successional patterns and productivity potentials of pinyon-juniper ecosystems. In: Developing strategies for rangeland management. *National Research Council/National Academy of Sciences* 1: 301-1332.
- Whiting, Beatrice Blyth. 1950. *Paiute Sorcery*. New York: Viking Fund Publications in Anthropology 15.
- Wilson, A. M., G. A. Harris, and D. H. Gates. 1966. Technical Notes. Cumulative effects of clipping on yield of bluebunch wheatgrass. *Journal of Range Management* 19(2):55-110.

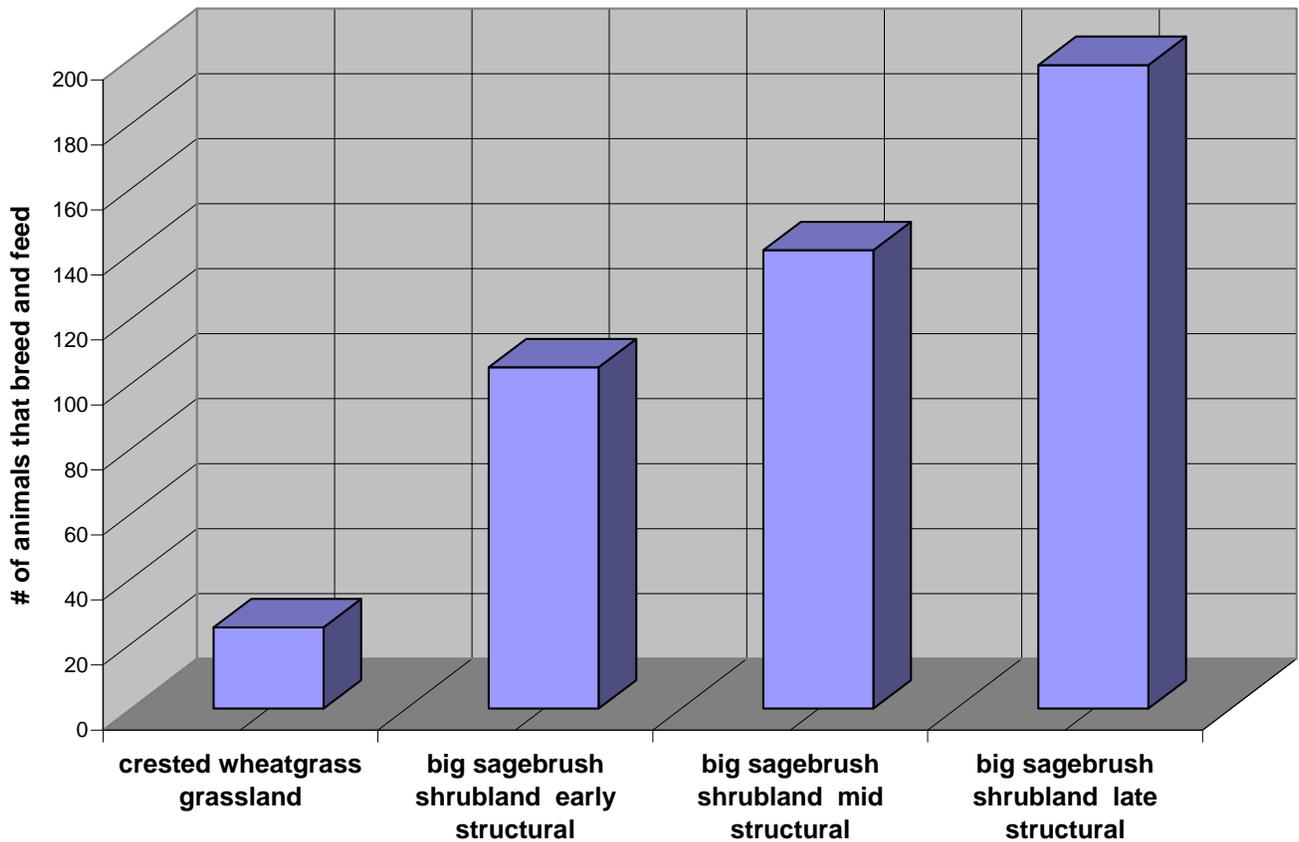
11 MAPS

- Map 1** – Geographical Management Areas In Malheur Resource Area
- Map 2** – North Half Grazing Allotments And Pastures With Land Status
- Map 3** – South Half Grazing Allotments And Pastures With Land Status
- Map 4** – Special Management Areas
- Map 5** – Vegetation – Ecological Status
- Map 6** – Riparian Areas By Functioning Condition
- Map 7** – Riparian Areas By Trend With Springs By Functioning Condition
- Map 8** – Fish Bearing Streams And Special Staus Species
- Map 9** – Alternative II Western Juniper Management Areas
- Map 10** – Alternative II Projects
- Map 11** – Citizen Wilderness Study Area Proposals

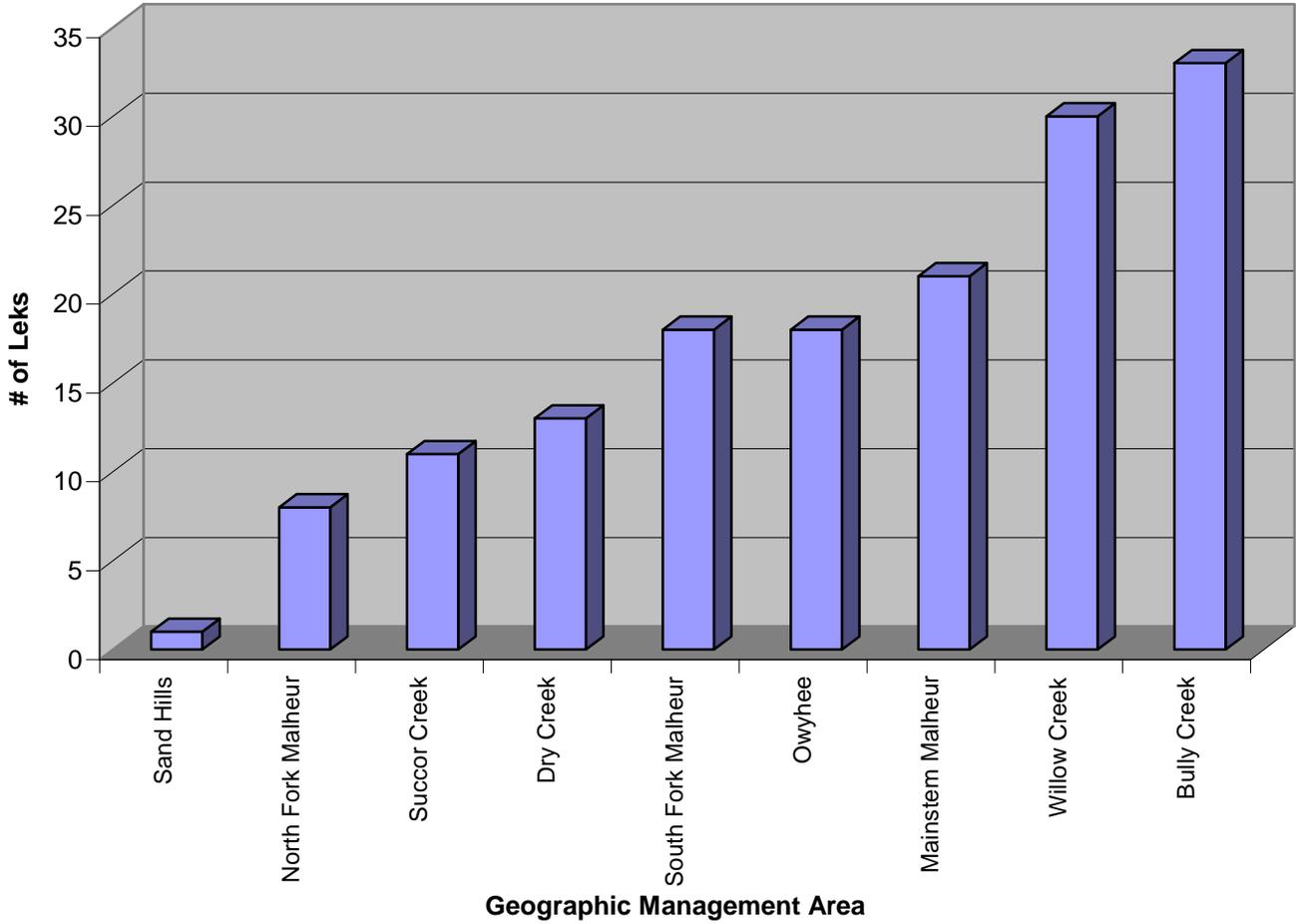
12 GRAPHS

Graph 1

Comparison of Crested Wheatgrass Grasslands to Big Sagebrush Shrublands and Wildlife Use



Graph 2
Sage Grouse Leks in Malheur Resource Area
Geographic Management Areas
(2004 data)



13 APPENDICES

13.1 Appendix A - Vegetation Types

Table A-1. Arid Vegetation Types (USDI BLM 1977)

Arid Vegetation Types	Primary Species	Comments
Arid Rolling Hills	Primary shrub species are Wyoming and basin big sagebrush; primary grass species are bluebunch wheatgrass, Thurber's needlegrass, and Sandberg bluegrass.	Driest of the sites; occurs on shallow, loamy soils.
Droughty Rolling Hills	Occasional Idaho fescue with bluebunch wheatgrass and Sandberg bluegrass. Bitterbrush and squaw apple may be found along with big sagebrush.	Occurs on deep, loamy soils.
Droughty South Exposure Steep Droughty South	Primary grass species is bluebunch wheatgrass with a Thurber needlegrass component.	Low elevations; arid, southern aspect communities.
Droughty North Exposure Steep Droughty North	Primary grass species is Idaho fescue; bitterbrush and squaw apple occur in minor amounts with basin big sagebrush.	Mesic and loamy soil conditions at low elevations.
Scabland	Includes either low or stiff sagebrush, primarily with Sandberg bluegrass.	Shallow lithosols.
Semi-moist Bottom	Primary grass species is giant wildrye with a bluebunch wheatgrass component.	Deep, loamy soils.

Table A-2. Mesic Vegetation Types (USDI BLM 1977)

Mesic Vegetation Types	Primary Species	Comments
Rolling Hills	Predominantly Idaho fescue and lesser amounts of bluebunch wheatgrass with a small component of mountain big sagebrush and bitterbrush.	High elevations with deep, loamy soils.
South Exposure Steep South	Primarily bluebunch wheatgrass with an Idaho fescue component; little big sagebrush and bitterbrush are present.	Deep soils and relatively high precipitation even on south-facing slopes.
North Exposure Steep North	Idaho fescue with some bluebunch wheatgrass; large amounts and varieties of forbs may be present; shrubs include mountain big sagebrush, snowberry, serviceberry and wax currant.	Loamy soils.
Moist Scabland	Primarily low sagebrush and Idaho fescue with small amounts of bluebunch wheatgrass; a minor bitterbrush component may be present.	

Mesic Vegetation Types	Primary Species	Comments
Moist Bottom	Primarily giant wildrye; few sites remain, most having been modified by cultivation practices.	Very deep, loamy soils.
Mahogany Rockland	Overstory is curleaf mountain mahogany and mountain big sagebrush; primary understory is Idaho fescue with small amounts of bluebunch wheatgrass.	
Juniper-Pine-Bunchgrass	Bluebunch wheatgrass with some Idaho fescue, mountain big sagebrush and low sagebrush; primary overstory is sparse Western juniper and ponderosa pine.	

13.2 Appendix B - Common and Scientific Names for Plants and Animals in the Southeast Oregon Resource Management Plan Area as Revised (2006)

13.2.1 Plant Species

Forbs

Alvord milkvetch *Astragalus alvordensis*
 Arrowleaf balsamroot *Balsamorhiza sagittata*
 Barren Valley collomia *Collomia renacta*
 Biddle's lupine *Lupinus biddlei*
 Biennial stanleya *Stanleya confertiflora*
 Bigelow's four o'clock *Mirabilis bigelovii* var. *retrorsa*
 Biscuitroot *Lomatium* spp.
 Bitter root *Lewisia rediviva*
 Blue mustard *Chorispora tenella*
 Brandegee's onion *Allium brandegei*
 Broad-flowered chaenactis *Chaenactis stevioides*
 Bull thistle *Cirsium vulgare*
 Bur buttercup *Ceratocephala testiculata*
 California chicory *Rafinesquia californica*
 Camas *Camassia* spp.
 Canada thistle *Cirsium arvense*
 Chambers twinpod *Physaria chambersii*
 Claspig pepperweed *Lepidium perfoliatum*
 Common mullein *Verbascum thapsis*
 Cooper's goldenflower *Hymenoxys lemmonii*
 Cronquist's stickseed *Hackelia cronquistii*
 Cusick's chaenactis *Chaenactis cusickii*
 Cusick's giant hyssop *Agastache cusickii*
 Dalmatian toadflax *Linaria genistifolia*
 Davis' peppergrass *Lepidium davisii*
 Desert chaenactis *Chaenactis xantiana*
 Diffuse knapweed *Centaurea diffusa*
 Ertter's senecio *Senecio ertterae*
 Four-winged milkvetch *Astragalus tetrapterus*
 Golden buckwheat *Eriogonum chrysops*
 Goosefoot *Chenopodium* spp.
 Greeley's cymopterus *Cymopterus acaulis* var. *greeleyorum*
 Grimy ivesia *Ivesia rhypara* var. *rhypara*
 Hairy wild cabbage *Caulanthus pilosus*
 Hairy-foot plantain *Plantago eriopoda*
 Halogeton *Halogeton glomeratus*
 Hedgehog cactus *Pediocactus simpsonii* var. *robustior*
 Houndstongue *Cynoglossum officinale*
 Ibapah wavewing *Cymopterus ibapensis*
 Janish's penstemon *Penstemon janishiae*
 King's penstemon *Penstemon kingii*
 King's rattleweed *Astragalus calycosus*
 Kochia *Kochia* spp.
 Kruckeberg's hollyfern *Polystichum kruckebergii*
 Largehead clover *Trifolium macrocephalum*

Forbs

Large-flowered chaenactis *Chaenactis macrantha*
 Leafy spurge *Euphorbia ensula*
 Lemmon's onion *Allium lemmonii*
 Low hawksweed *Crepis modocensis* ssp. *modocensis*
 Mackenzie's phacelia *Phacelia lutea* var. *mackenzieorum*
 Male fern *Dryopteris filix-mas*
 Malheur cryptantha *Cryptantha propria*
 Malheur stylocline *Stylocline psilocarphoides*
 Malheur Valley fiddleneck *Amsinckia carinata*
 Mediterranean sage *Salvia aethiopsis*
 Mulford's milkvetch *Astragalus mulfordiae*
 Musk thistle *Carduus nutans*
 Naked-stemmed phacelia *Phacelia gymnoclada*
 Ochre-flowered buckwheat *Eriogonum ochrocephalum* ssp. *calcareum*
 Onion *Allium* spp.
 Oregon princesplume *Stanleya confertiflora*
 Owyhee clover *Trifolium owyheense*
 Owyhee milkvetch *Astragalus atratus* var. *owyheensis*
 Packard's mentzelia *Mentzelia packardiae*
 Packard's lomatium *Lomatium packardiae*
 Palmer's evening-primrose *Camissonia palmeri*
 Perennial pepperweed *Lepidium latifolium*
 Phlox *Phlox* spp.
 Playa buckwheat *Eriogonum salicornioides*
 Playa phacelia *Phacelia inundata*
 Prickly lettuce *Lactuca* spp.
 Prickly-poppy *Argemone munita* ssp. *rotundata*
 Profuse-flowered mesa mint *Pogogyne floribunda*
 Punctate langloisia *Langloisia setosissima* ssp. *punctata*
 Puncture-vine (*Tribulus terrestris*)
 Raven's lomatium *Lomatium ravenii*
 Rose's lomatium *Lomatium roseanum*
 Rush skeletonweed *Chondrilla juncea*
 Russian knapweed *Acroptilon repens*
 Russian thistle *Salsola kali*
 Salt heliotrope *Heliotropium curassavicum*
 Scotch thistle (*Onopordum acanthium*)
 Short-lobed penstemon *Penstemon seorsus*
 Siberian water-milfoil *Myriophyllum sibiricum*
 Sinister gilia *Gilia sinistra* ssp. *sinistra*
 Slender wild cabbage *Caulanthus major* var. *nevadensis*
 Smooth mentzelia *Mentzelia mollis*

Forbs

Smooth malacothrix *Malacothrix glabrata*
Snake River cryptantha *Cryptantha spiculifera*
Snake River goldenweed *Pyrrocoma radiata*
Snake River milkvetch *Astragalus purshii* var. *ophiogenes*
Spotted knapweed *Centaurea biebersteinii*
Spreading stickseed *Hackelia patens* var. *patens*
Sterile milkvetch *Astragalus sterilis*
Sweet-clover *Melilotus* spp.
Texas bergia *Bergia texana*
Three Forks stickseed *Hackelia ophiobia*
Trout Creek milkvetch *Astragalus salmonis*
Two-stemmed onion *Allium bisceptrum*
Tumble mustard *Sisymbrium altissimum*
Weak-stemmed milkvetch *Astragalus solitarius*
White locoweed *Oxytropis sericea* var. *sericea*
White-flowered penstemon *Penstemon pratensis*
Whiteweed *Cardaria* spp.
Yellow star-thistle *Centaurea solstitialis*

Grasses and grasslike plants

Alkali bulrush *Scirpus robustus*
Annual dropseed *Muhlenbergia minutissima*
Baltic rush *Juncus balticus*
Basin wildrye *Leymus cinereus*
Bluebunch wheatgrass *Pseudoroegneria spicata*
Bottlebrush squirreltail *Elymus elymoides*
Cattail *Typha* spp.
Cheatgrass *Bromus tectorum*
Creeping wildrye *Leymus triticoides*
Crested wheatgrass *Agropyron cristatum*
Elk sedge *Carex geyeri*
Foxtail barley *Hordeum jubatum*
Idaho fescue *Festuca idahoensis*
Indian ricegrass *Oryzopsis hymenoides*
Medusahead *Taeniatherum caput-medusae*
Mountain brome *Bromus carinatus*
Nebraska sedge *Carex nebraskensis*
Needlegrass *Achnatherum* spp.
Needleandthread grass *Achnatherum comata*
Nodding melic *Melica stricta*
Pinegrass *Calamagrostis rubescens*
Porcupine sedge *Carex hystericina*
Prairie Junegrass *Koeleria macrantha*
Rush *Juncus* spp.
Saltgrass *Distichlis spicata*
Sand dropseed *Sporobolus cryptandrus*
Sandberg bluegrass *Poa secunda*
Sixweeks fescue *Vulpia octoflora*
Sedge *Carex* spp.
Slenderbeak sedge *Carex athrostachya*
Slender wheatgrass *Elymus trachycaulus*
Smooth brome *Bromus inermis*
Spikerush *Eleocharis* spp.
Swordleaf rush *Juncus ensifolius*

Grasses and grasslike plants

Thurber's needlegrass *Stipa thurberiana*
Torrey's rush *Juncus torreyi*
Water sedge *Carex aquatilis*
Western wheatgrass *Pascopyrum smithii*

Shrubs

Antelope bitterbrush *Purshia tridentata*
Basin big sagebrush *Artemisia tridentata* ssp. *tridentata*
Big sagebrush *Artemisia tridentata*
Bittercherry *Prunus emarginata*
Black sagebrush *Artemisia nova*
Bud sagebrush *Artemisia spinescens*
Ceanothus *Ceanothus* spp.
Common snowberry *Symphoricarpos albus*
Coyote willow *Salix exigua*
Currant *Ribes* spp.
Fourwing saltbush *Atriplex canescens*
Gray rabbitbrush *Ericameria nauseosus*
Golden currant *Ribes aureum*
Greasewood *Sarcobatus vermiculatus*
Green rabbitbrush *Ericameria viscidiflorus*
Horsebrush *Tetradymia* spp.
Huckleberry *Vaccinium* spp.
Iodine bush *Allenrolfea occidentalis*
Lemmon willow *Salix lemmonii*
Lewis' mock orange *Philadelphus lewisii*
Long-flowered snowberry *Symphoricarpos longiflorus*
Low sagebrush *Artemisia arbuscula*
Mormon tea *Ephedra viridis*
Mountain big sagebrush *Artemisia tridentata* ssp. *vaseyana*
Mountain mahogany *Cercocarpus ledifolius*
Mountain snowberry *Symphoricarpos oreophilus*
Oregon grape *Mahonia repens*
Owyhee sagebrush *Artemisia papposa*
Pacific willow *Salix lucida* ssp. *lasiandra*
Packard's artemisia *Artemisia packardiae*
Peachleaf willow *Salix amygdaloides*
Rabbitbrush *Ericameria* spp.
Redosier dogwood *Cornus sericea*
Sandbar willow *Salix exigua*
Saskatoon serviceberry *Amelanchier alnifolia*
Scouler's willow *Salix scouleriana*
Shadscale saltbush *Atriplex confertifolia*
Silver sagebrush *Artemisia cana*
Spiny hopsage *Grayia spinosa*
Spiraea *Spiraea* spp.
Squaw apple *Peraphyllum ramosissimum*
Stiff sagebrush *Artemisia rigida*
Threetip sagebrush *Artemisia tripartite*
Wada (Pursh seepweed) *Suaeda calceoliformis*
Western chokecherry *Prunus virginiana*
Whiplash willow *Salix lasiandra*

Shrubs

Willow *Salix* spp.
Winterfat *Krascheninnikovia lanata*
Wood's rose *Rosa woodsii*
Wyoming big sagebrush *Artemisia tridentata* ssp.
wyomingensis
Yellow willow *Salix lutea*

Trees

Alder *Alnus* spp.
Black cottonwood *Populus balsamifera* ssp.
trichocarpa
Cottonwood *Populus* spp.
Douglas fir *Pseudotsuga menziesii*
Engelmann spruce *Picea engelmannii*

13.2.2 Animals

Invertebrates

Hotspring physa *Physella* sp.
Malheur cave amphipod *Stygobromus hubbsi*
Malheur pseudoscorpion *Apoththionius malheuri*
Planarian *Kenkia rhynchida*
Western ridged mussel *Gonidea angulata*
Western pearlshell mussel *Margaritifera falcata*
Threeforks pyrg *Pyrgulopsis* sp.

Fish

Black bullhead *Ictalurus melas*
Black crappie *Pomoxis nigromaculatus*
Bridgelip sucker *Catostomus columbianus*
Brook trout *Salvelinus fontinalis*
Brown trout *Salmo trutta*
Bull trout *Salvelinus confluentus*
Channel catfish *Ictalurus punctatus*
Chinook salmon *Oncorhynchus tshawytscha*
Chiselmouth *Acrocheilus alutaceus*
Inland redband trout *Oncorhynchus mykiss* ssp.
Lahontan cutthroat trout *Oncorhynchus clarki henshawi*
Lahontan redband *Richardsonius egregius*
Largescale sucker *Catostomus macrocheilus*
Longnose dace *Rhinichthys cascadae*
Margined sculpin *Cottus marginatus*
Mountain whitefish *Prosopium williamsoni*
Northern pikeminnow *Ptychocheilus oregonensis*
Pacific lamprey *Entosphenus tridentatus*
Rainbow trout *Oncorhynchus mykiss*
Redside shiner *Richardsonianus balteatus*
Shorthead sculpin *Cottus confusus*
Smallmouth bass *Micropterus dolomieu*
Speckled dace *Rhinichthys falcatus*
Tahoe sucker *Catostomus tahoensis*

Amphibians

Blotched tiger salamander *Ambystoma tigrinum melanostictum*

Trees

Grand fir *Abies grandis*
Hawthorn *Crataegus* spp.
Lodgepole pine *Pinus contorta*
Mountain alder *Alnus incana*
Narrowleaf cottonwood *Populus angustifolia*
Ponderosa pine *Pinus ponderosa*
Quaking aspen *Populus tremuloides*
Subalpine fir *Abies lasiocarpa*
Water birch *Betula occidentalis*
Western juniper *Juniperus occidentalis*
Western larch *Larix occidentalis*
White fir *Abies concolor*

Amphibians

Long toed salamander *Ambystoma macrodactylum*
Columbia spotted frog *Rana luteiventris*
Northern leopard frog *Rana pipiens*
Pacific treefrog *Hyla regilla*
Western toad *Bufo boreas*

Reptiles

Common garter snake *Thamnophis sirtalis*
Desert horned lizard *Phrynosoma platyrhinos*
Gopher snake *Pituophis catenifer*
Longnose leopard lizard *Gambelia wislizenii*
Mojave black collared lizard *Crotaphytus bicinctores*
Northern sagebrush lizard *Sceloporus graciosus*
Painted turtle *Chrysemys picta*
Racer *Coluber constrictor*
Short horned lizard *Phrynosoma douglassi*
Side blotched lizard *Uta stansburianus*
Striped whipsnake *Masticophis taeniatus*
Wandering garter snake *Thamnophis elegans vagrans*
Western fence lizard *Sceloporus occidentalis*
Western ground snake *Sonora semiannulata*
Western rattlesnake *Crotalus oreganus*
Western whiptail lizard *Cnemidophorus tigris*

Birds

American avocet *Recurvirostra americana*
American kestrel *Falco sparverius*
American robin *Turdus migratorius*
American white pelican *Pelecanus erythrorhynchos*
Bank swallow *Riparia riparia*
Barrow's goldeneye *Bucephala islandica*
Black tern *Chlidonias niger*
Black-backed woodpecker *Picoides arcticus*
Black-throated sparrow *Amphispiza bilineata*
Blue grouse *Dendragapus obscurus*
Bobolink *Dolichonyx oryzivorus*
Brewer's sparrow *Spizella breweri*
Broad-tailed hummingbird *Selasphorus platycercus*

Birds

Bufflehead *Bucephala albeola*
 Burrowing owl *Athene cunicularia*
 Canada goose *Branta canadensis*
 Chukar partridge *Alectoris chukar*
 Cinnamon teal *Anas cyanoptera*
 Cooper's hawk *Accipiter cooperi*
 Ferruginous hawk *Buteo regalis*
 Flammulated owl *Otus flammeolus*
 Franklin's gull *Larus pipixcan*
 Gadwall *Anas streperus*
 Golden eagle *Aquila chrysaetos*
 Grasshopper sparrow *Ammodramus savannarum*
 Gray flycatcher *Empidonax wrightii*
 Gray partridge *Perdix perdix*
 Great gray owl *Strix nebulosa*
 Greater sage grouse *Centrocercus urophasianus*
 Greater sandhill crane *Grus canadensis*
 Horned lark *Eremophila alpestris*
 Least bittern *Ixobrychus exilis*
 Lewis's woodpecker *Melanerpes lewis*
 Loggerhead shrike *Lanius ludovicianus*
 Long-eared owl *Asio otus*
 Long-billed curlew *Numenius americanus*
 Mallard *Anas platyrhynchos*
 Mountain quail *Oreortyx pictus*
 Mourning dove *Zenaida macroura*
 Northern bald eagle *Haliaeetus leucocephalus*
 Northern flicker *Colaptes auratus*
 Northern goshawk *Accipiter gentilis*
 Northern harrier *Circus cyaneus*
 Northern pygmy owl *Glaucidium gnoma*
 Peregrine falcon *Falco peregrinus anatum*
 Pileated woodpecker *Dryocopus pileatus*
 Pine grosbeak *Pinicola enucleator*
 Prairie falcon *Falco mexicanus*
 Pygmy nuthatch *Sitta pygmaea*
 Red-tailed hawk *Buteo jamaicensis*
 Ring-necked pheasant *Phasianus colchicus*
 Rough-legged hawk *Buteo lagopus*
 Ruby-crowned kinglet *Regulus calendula*
 Sage sparrow *Amphispiza belli*
 Sage thrasher *Oreoscoptes montanus*
 Sharp-shinned hawk *Accipiter striatus*
 Snowy egret *Egretta thula*
 Spotted sandpiper *Actitis macularia*
 Spruce grouse *Falcipennis canadensis*
 Swainson's hawk *Buteo swainsoni*
 Three-toed woodpecker *Picoides tridactylus*
 Tundra swan *Cygnus columbianus*
 Upland sandpiper *Bartramia longicauda*
 Valley quail *Callipepla californica*
 Western bluebird *Sialia mexicana*
 Western burrowing owl *Athene cunicularia*
 Western meadowlark *Sturnella neglecta*
 Western snowy plover *Charadrius alexandrinus*

Birds

White-faced ibis *Plegadis chihi*
 White-headed woodpecker *Picoides albolarvatus*
 Williamson's sapsucker *Sphyrapicus thyroideus*
 Wilson's phalarope *Phalaropus tricolor*
 Yellow-billed cuckoo *Coccyzus americanus*
 Yellow-breasted chat *Icteria virens*
 Yellow warbler *Dendroica petechia*

Mammals

Antelope ground squirrel *Ammospermophilus leucurus*
 Black bear *Ursus americanus*
 California bighorn sheep *Ovis canadensis californiana*
 California myotis *Myotis californicus*
 California wolverine *Gulo gulo luteus*
 Canada lynx *Lynx canadensis*
 Cougar *Felix concolor*
 Fringed myotis *Myotis thysanodes*
 Gray wolf *Canis lupus*
 Hoary bat *Lasiurus cinereus*
 Kit fox *Vulpes macrotis velox*
 Long-eared myotis *Myotis evotis*
 Long-legged myotis *Myotis volans*
 Mule deer *Odocoileus hemionus*
 Pacific Townsend's big eared bat *Plecotus townsendii*
 Big-eared bat *corinorhynis*
 Pallid bat *Antrozous pallidus*
 Preble's shrew *Sorex preblei*
 Pronghorn antelope *Antilocapra americana*
 Pygmy rabbit *Brachylagus idahoensis*
 River otter *Lutra canadensis*
 Rocky Mountain elk *Cervus canadensis*
 Sagebrush vole *Lagurus curtatus*
 Spotted bat *Euderma maculatum*
 Silver-haired bat *Lasionycteris noctivagans*
 White-tailed jackrabbit *Lepus townsendi*
 Yuma myotis *Myotis yumanensis*

13.3 Appendix C – Alternative II Grazing Schedules

Agency Mountain Allotment

Pasture	Year 1 and Year 4	Year 2	Year 5	Year 3 and Year 6
Agency Mountain	5/1-6/15 333AUM	9/15-10/31 76AUM	4/1-5/1 229AUM	4/1-5/7 274AUM
North Agency Mountain	4/1-5/1 229AUM	4/1-5/1 229AUM	9/16-10/31 76AUM	5/8-6/14 281 AUM
Water Gulch	6/15-10/31 756AUM	6/15-9/15 762AUM	6/5-9/15 762AUM	6/15-10/31 756AUM
Orchard FFR	FFR	4/15-6/15 Sheep	4/15-6/15 Sheep	FFR
Reservoir Field/ Beulah FFR	4/15-6/15 Sheep	FFR	FFR	4/1-5/15 Sheep*

* Indicates 50 AUMS of spring sheep use. Ten AUMS of sheep use would occur in the fall. No cattle use would occur in Years 2 and 4 from 5/2 to 6/4 for an estimated 251 AUMS of Non-Use.

Allotment # 6

Pasture	Year 1	Year 2	Year 3
Juniper Gulch	10/1 - 3/1	10/1 - 3/1	10/1 - 3/1

Beulah Allotment

Pasture	Year 1	Year 2	Year 3	Year 4
Big Seeding ¹	5/11-6/1 66AUM	4/15-5/01 59AUM	3/14-4/18 121AUM	Same as Year 1
Antelope ¹	6/18-10/5 329AUM	6/1-10/3 374AUM	5/15-9/1 329AUM	Same as Year 1
Scab ¹	3/14-4/21 135AUM	5/1-5/20 57AUM	4/19-5/14 87AUM	Same as Year 1
McClellan ¹	4/22-5/10 62AUM	3/20-4/14 90AUM	10/15-12/15 65AUM	Same as Year 1
Little Seeding ¹	FFR	FFR	FFR	Same as Year 1
Moonshine ²	3/20-5/1 (160AUM)	3/20-5/1 (110AUM) 3/20-5/1 (50AUM)	3/20-5/1 (160AUM)	3/20-5/1 (110AUM) 3/20-5/1 (50AUM)
Jack Creek	3/15-4/7 (172AUM) 3/15-4/7 (50AUM)	3/15-4/15 (222AUM)	4/21-5/21 (223AUM) 4/21-5/21 (50AUM)	3/15-4/14 (222AUM)
Upper Poverty	4/7-5/1 H (118AUM)	9/1-10/7 C+A (91AUM)	3/20-4/20 (129AUM)	5/1-5/21 (150AUM)
Lower Poverty	5/1-5/15 H (69AUM)	10/7-11/4 C+A (69AUM)	3/20-4/20 (100AUM)	4/14-5/1 (115AUM)
Burnt Field	5/1-6/1 (58AUM)	4/15-4/21 (50AUM)	Trailing (20AUM)	Trailing (20AUM)
Bennett	Trailing (20AUM)	Trailing (20AUM)	5/21-6/1 (79AUM)	10/1-11/1 A (53AUM)
North East Homestead	9/14-11/1 (242AUM)	4/21-5/21 (215AUM)	6/1-6/21 (143AUM)	10/1-11/1 (105AUM)
North West Homestead	6/8-6/21 (117AUM)	5/21-6/10 (143AUM)	9/1-10/1 H (92AUM)	10/1-11/1 (158AUM)
West MJ	5/15-6/7 (191AUM)	10/1-11/21 (256AUM)	10/1-11/7	5/21-6/14 (169AUM)

Pasture	Year 1	Year 2	Year 3	Year 4
	5/15-6/7 (50AUM)		(240AUM)	5/2-6/10 (50AUM)
Mud Springs	6/1-6/21 (38AUM)	5/1-6/1 (22 AUM) <i>5/1-6/1 (36AUM)</i>	<i>5/21-6/21 (50AUM)</i>	9/1-10/1 (67AUM)

¹ Indicates fields utilized by operator # 3603154.

² Moonshine pasture would be shared by operators #3603154 and #3603431 with each permittee not utilizing over 80 AUMS each.

³ *Italicized* text indicates sheep use by operator # 3603431.

* In Year 3, ten days of flexibility would be added to the Lower Poverty pasture and 15 days of flexibility would be added to Upper Poverty pasture due to potential snow conditions.

Calf Creek Allotment

Pasture	Year 1 (2008)	Year 2 (2009)	Year 3 (2010)	Year 4 (2007 and 2011)
Stemler Basin	<i>3/26-5/1 (158AUM)</i>	4/1-6/1 (545AUM)	11/2-12/1 (274AUM) <i>4/1-4/25 (107AUM)</i>	11/2-12/1 (274AUM) <i>4/16-6/1 (201AUM)</i>
Dishrag	8/1-9/1, 10/1-12/1 (719AUM) <i>3/15-3/25, 5/15-6/1 (124AUM)</i>	6/2-9/1 (704AUM) <i>5/16-6/1 (73AUM)</i>	6/11-9/1 (603AUM) <i>3/15-3/31 (71AUM)</i>	4/1-6/1 (620AUM)
Cave Creek	5/1-6/1 (173AUM)	4/1-4/22 (117AUM)	5/21-6/10 (100AUM)	7/1-7/15 (140AUM)
Lake Ridge	6/1-8/1 (562AUM) <i>5/2-5/14 (56AUM)</i>	10/1-11/1 (293AUM) <i>4/26-5/15 (86AUM)</i>	4/1-5/20 (488AUM)	7/16-9/1 (233M) <i>3/15-4/15 (137AUM)</i>
Lower Calf Creek Private	3/15-3/31 (70AUM)	3/15-3/31 (70AUM)	3/15-3/31 (70AUM)	3/15-3/31 (70AUM)
Lower Calf Creek BLM	Rest	Rest	4/1-5/1 46AUM <i>5/21-6/1 (51AUM)</i>	6/1-6/14 (130AUM)
Upper Calf Creek	5/1-6/1 (166AUM)	<i>3/15-3/27 (57AUM)</i>	5/21-6/10 (124AUM)	6/15-7/1 (170AUM)
Chalk Camp	4/1-5/1 (331AUM)	11/2-12/1 (274AUM) <i>3/28-4/25 (124AUM)</i>	10/1-11/1 (293AUM) <i>4/26-5/20 (109AUM)</i>	10/1-11/1 (293AUM)
Grasshopper	FFR	FFR	FFR	FFR

**Italicized* text indicates sheep use.

Castle Rock Allotment

Pasture	Year 1	Year 2	Year 3
Castle Rock	Rest	4/1-6/30	10/1-10/31
Clevenger Butte #1	Rest	4/1-6/15	10/1-10/31
Clevenger Butte #2	4/1-6/30	7/1-8/31	Rest
Duck Pond	Rest	3/20-6/30	10/1-11/15
South Rockpile ¹	Rest	3/20-6/30	Rest
North Rockpile ¹	3/20-6/15	Rest	3/20-6/15
House ²	10/1-11/15	Rest	3/20-6/30
Poison Field	Rest	10/1-11/15	4/1-6/15
Heifer	4/1-6/30	10/1-10/30	Rest
Hat Butte	10/1-10/31	Rest	4/1-6/30
Sheep Rock	5/1-6/15	Rest	Rest
East Rockpile	3/20-5/31	Rest	3/20-5/31
Water Gulch FFR	Use will be light/rest in compliance w/ USFWS BO		
Goodwin FFR	FFR		
Little Malheur FFR	FFR		

Pasture	Year 1	Year 2	Year 3
Holdout FFR			

¹ North Rockpile will be grazed on uneven years beginning in 2007 and South Rockpile will be grazed on even years beginning in 2008.

²New pasture

DeArmond-Murphy Allotment

Pasture	Year 1 (2007)	Year 2 (2008)
Mahogany Mountain	6/1-7/15	Rest
Pole Gulch	4/1-5/31	Rest
Castle Rock	7/15-10/31	7/15-10/31
Jerry Canyon*	Rest	6/1-8/1
Upper Beulah Seeding	Rest	4/15-5/25
Lower Beulah Seeding	3/15-4/20	3/15-4/20
Hunter Mountain	4/1-5/31	Rest
Hunter Creek	Rest	4/1-5/31
Morton	Rest	5/10-7/15
Butler	Rest	5/10-7/15
Murphy Reservoir	Rest	4/1-5/10
West Bendire	Rest	4/1-5/10
East Bendire	Rest	4/1-5/10
West Munker	4/1-5/31	Rest
North Munker	Rest	6/1-7/15
South Munker	6/1-7/15	Rest
Earp FFR	FFR	
Hayfield FFR		
South Earp FFR		
Middle Earp FFR		
Homestead FFR		
School Section FFR		
Emmigrant Hill FFR		
Agency Valley FFR		
Lost Creek FFR		
Upper Warm Spring Creek FFR		
Warm Spring Creek FFR		

¹New pasture.

²Rest in Jerry Canyon pasture will be contingent upon construction of the Jerry Canyon fence.

Whitley Canyon Allotment

Pasture	Year 1 (2007)	Year 2 (2008)	Year 3 (2009)
Burnt Mountain	9/15-10/31	4/1-6/30	9/15-10/31
Pete's Mountain	Rest	10/1-10/31	4/1-6/30
West Juniper	4/1-5/30	9/15-10/31	9/15-10/31
Little Malheur ¹	6/1-9/30	7/1-9/30	7/1-9/30
PJ #2	9/15-10/31	9/15-10/31	4/1-6/30
PJ #1 FFR	FFR	FFR	FFR
River Pasture ²	Rest	5/1-5/31	Rest
Dogwood Pasture ²	Rest	5/1-5/31	Rest

* Grazing in these two pastures would be the same as North Rockpile in the Castle Rock Allotment, depending on year grazing system is implemented. Coordinate implementation of grazing sequence with previous use.

¹ Grazing use in Little Malheur pasture may be less than scheduled due to upland utilization limits of 40%.

² Grazing in these two pastures would be the same as N. Rockpile in the Castle Rock Allotment, (depending on year grazing system is implemented. Coordinate implementation of grazing sequence with previous use).

Italicized entries indicate pastures utilized by operator #3601553.

13.4 Appendix D – All Projects

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Agency Mountain					
Agency Mountain Div. Fence	Agency Mountain	Diagonal Fence to split pasture to improve distribution.	Approx. 1.5 miles - N. Pasture approx. 1200ac. (120 pvt.), S. Pasture approx. 1100ac. (265 pvt.)	X	X
JUOC treatment	All	up to 2,525 Acres in Alt. II, 86 Acres in Alt. III	Alt. II, Priority 1-4, Alt. III, Priority 1	X	X
Agency Spring	Agency Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed.	Priority 3c	X	X
Allotment # 6					
JUOC treatment	Juniper Gulch	Treat Putr sites and buffer - winter/spring burn only individual trees	up to 5038 Acres Priority 2	X	
Well and Pipeline	Juniper Gulch	Well, ppl, and trough for winter livestock distribution.	1.11 miles, 2 troughs (1 on pvt.)	X	X
Red Willow Spring	Juniper Gulch	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Horseshoe Bend Rec.	Malheur River	Camp/fee site, <10 camp sites, trail, rocked road, gate @ hwy., parking area	RMP ID'd	X	X
Reservoirs (Stemler Ridge, Adobe, Dugout, and unnamed)	Juniper Gulch	Bentonite all	Maintenance; if this works, evaluate the need for the pipeline.	X	X
Horseshoe Bend Spring	Juniper Gulch	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Beulah					
Poverty Flat Spring	Lower Poverty	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Grasshopper Spring	Upper Poverty	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Moonshine Spring	Moonshine	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
TJ Spring	Moonshine	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
unnamed spring	Jack Creek	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Jack Spring	Jack Creek	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Crickett Spring	outside allotment		Priority 4	X	X
North Homestead Division Fence	North Homestead	Construct new fence adjacent to a road which will effectively split the North Homestead pasture in half (thus North East Homestead and North West Homestead)	Approx. 1.5 mi.	X	X
Upper Poverty/ Jack Creek Fence	Upper Poverty	Fence to complete pasture perimeter	Approx. 1 mi.	X	X
Lower Poverty/Jack Creek Fence	Lower Poverty	Fence to complete pasture perimeter	Approx. 1 mi.	X	X
Hardway Pit Reservoir	Antelope	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Hump Pit Reservoir	Upper Poverty	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Little Seeding Mow	Little Seeding	Sagebrush Mow	68 Acres, 45% of pasture acreage	X	X
Big Seeding Mow	Big Seeding	Sagebrush Mow	58 Acres, 11% of pasture acreage	X	X
Mud Springs Fence	Mud Springs	Reconstruct 0.5 mile of a division fence	.5 mile of existing fence to reconstruct	X	
JUOC treatment	ALL	Juniper Treatment	up to 11,300 Acres, Priority 2-4	X	

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Calf Creek					
Boulder Spring #1	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Indian Spring	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Poverty Spring	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Juniper Tree Spring	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Boulder Spring #2	Lake Ridge	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Dishrag Spring	Lake Ridge	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Chalk Spring	Chalk Camp	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Cherry Spring	Chalk Camp	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Lake Ridge Spring Pit	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Burnt Mountain Pit Reservoir	Dishrag	Abandon reservoir and make into spring development. Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Lake Ridge Charco Pit	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Boulder Pit Reservoir	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Dishrag Pit Reservoir	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Reservoir in Sec 27 of	Stemler Basin	Abandon reservoir and reclaim area		X	X
Lower Heifer Reservoir	Stemler Basin	Abandon reservoir and reclaim area		X	X
Lowest Heifer Reservoir	Stemler Basin	Abandon reservoir and reclaim area		X	X
Superstition (Fence) Reservoir	Stemler Basin	Abandon reservoir and reclaim area		X	X
JUOC treatment	ALL	Juniper Treatment	up to 12,840 Acres Priority 2-4	X	
Cave Creek Rim Fence	Cave Creek	Construct 1.0 mile of gap fencing	Construct fence along north boundary	X	X
Lower Calf Creek Division Fence	Lower Calf Creek	Make permanent 1.8 miles of existing fence	To fence private lands to protect riparian resources.	X	X
Aspen	Dishrag	Jackstraw juniper and/or Rx Fire		X	X
Castle Rock					
JUOC treatment	ALL	up to 11,075 Ac. Alt. II, 6,025 Ac. Alt. III	Alt. II, Priority 1-4, Alt. III, Priority 1	X	X
Castle Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut. *	Priority 2	X	X
Log Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut. *	Priority 2	X	X
WSA Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
unknown Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Horse Flat Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Harney Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Clevenger Butte Spring #1	Clevenger Butte #1	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Clevenger Butte Spring #2	Clevenger Butte #2	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
unknown Spring	Clevenger Butte #3	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
unknown spring (T16S, R37E, Sec. 20 se)	Clevenger Butte 2	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Fox Spring	Duck Pond	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Charcoal Spring	Duck Pond	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
unknown spring (Laddie Lake)	Duck Pond	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Shale Spring	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
Malheur Spring	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
Malheur Spring #2	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Twin Juniper Spring	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Lost Creek Spring	Heifer	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Iris Spring (Middle Heifer)	Heifer	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
unknown spring/reservoir	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Lost Creek Spring #1740	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
Castle Rock Spring	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Hat Butte Pit/Spring	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Castleview Spring	Sheep Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Camp Spot Spring	Sheep Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Green Spot Spring	do not know whose allotment this is in		Priority 4	X	X
Aspen		Jackstraw juniper and/or Rx Fire. Within WSA, Rx Fire only.		X	X
Mountain Mahogany	Castle Rock	Treated appropriately with fire, mechanical, and temporary fencing. No treatment within WSA.		X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Chukar Park					
Chukar Park Rec. NEW		Pull-out north of CP, rocked road, unimproved camping allowed.	RMP ID'd	X	X
Chukar Park Rec. Site - update		Improvements would include though not be limited to: developing 3 -5 additional individual camp sites north of the 2 restrooms adjacent to campsite number four (should future use demands indicate their need); installing a septic system (or gray/dark water	Also in Alternative I. (Id'd in the SEORMP).	X	X
Cottonwood Creek					
JUOC treatment	ALL	up to 853 Ac. Alt. II	Alt. II, Priority 2-4	X	
Dearmond-Murphy					
Division Fence	Castle Rock	Reconstruct fence East of Jerry Canyon to a point south of Castle Rock Guard Station, construct new fence west to allotment boundary.	3 miles, Jerry Canyon Pasture approx. 3475ac. (80 pvt.), Castle Rock North approx. 7100ac. (655 pvt.)	X	X
Hunter Spring Rec. Devel.	Castle Rock/New Jerry Cyn.	Enlarge Excl., 10 sites, 1 vault toilet, rock access	RMP ID'd, is w/in ACEC	X	X
Hunter Spring/Castle Rock Trail	Jerry Cyn	Discovery trail - not advertised or signed		X	X
Castle Rock Guard Station	Castle Rock	Fee campsite w/ 10 sites, fence/cattleguard, new vault toilets	RMP ID'd, is w/in ACEC	X	X
Division Fence	Beulah Seeding	Fence off east private lands	creates Beulah Seeding (1497ac., 95 pvt.) and Beulah Seeding FFR (200ac., 14 pvt., 52 BOR); managed alternately for livestock use, 1 mile	X	X
JUOC Treatment	ALL	up to 23,622 Ac. Alt. II, 4,651 Ac. Alt. III	Alt. II, Priority 1-4, Alt. III, Priority 1	X	X
Mountain Mahogany	DeArmond - Murphy Allotment	treated appropriately with fire, mechanical and/or exclusion. Within WSA, no treatment.	Castle Rock, Mahogany Mtn. pastures #1 priority	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Medusa/BRTE Treatment	Beulah Seeding	treat medusahead on approx 600 acres and replace native grasses+ forb(s)		X	X
Aspen	DeArmond - Murphy Allotment	treated appropriately with fire, mechanical and/or exclusion. Within WSA, Rx fire only.	Castle Rock, Mahogany Mtn. pastures this is a priority	X	X
Rodeo Spring	Mahogany Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
Reds Spring	Mahogany Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3c	X	X
Duke Spring	Pole Gulch	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3c	X	X
Hunter Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3b	X	X
Mouse Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Irish Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Jerry Canyon Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Hunter Creek Spring #1	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Hunter Creek Spring #2	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Hunter Creek Spring #3	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Little Mouse Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Wilson Spring	Hunter Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Hunter Mountain Spring	Hunter Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
C. C. Spring	Hunter Creek	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Lower Morton Spring	Morton	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Upper Morton Spring	Morton	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Ed Spring	Morton	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3b	X	X
Rattlesnake Spring	North Munker	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3b	X	X
Mahogany Pit Reservoir	Mahogany Mountain	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3c	X	X
Juniper Spring Pit Reservoir	Pole Gulch	Abandon reservoir and make into spring development. Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3c	X	X
Big Buck Pit	North Munker	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3c	X	X
Four Point Pit Reservoir	North Munker	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 3c	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Bateman Reservoir	Castle Rock	Abandon reservoir		X	X
Basin Reservoir	School Section	Abandon reservoir, reclaim area		X	X
Ironside Mountain East					
JUOC treatment		up to 1,094 Acres in Alt. II and Alt. III	Priority 1	X	X
Ironside Mountain West					
JUOC treatment		up to 110 Acres in Alt. II	Alt. II, Priority 2-3	X	
Kivett					
JUOC treatment		up to 241 Acres in Alt. II	Alt. II, Priority 2-3	X	
Lockhart Mountain					
JUOC treatment		up to 1,033 Acres in Alt. II and Alt. III	Priority 1	X	X
Malheur River					
unnamed Spring		Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1	X	X
unnamed Spring		Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1	X	X
RMP Extension Fence		Fence the Little Malheur River.	0.5 miles	X	X
JUOC treatment		up to 624 Acres Alts. II and III	Priority 1	X	X
Ring Butte					
unnamed Spring		Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
JUOC treatment		up to 312 Acres in Alt. II, 129 Acres in Alt. III	Alt. II, Priority 1-4, Alt. III, Priority 1	X	X
South Willow Creek					
JUOC treatment		up to 1,028 Acres in Alt. II, 55 Acres in Alt. III	Alt. II, Priority 1-3, Alt. III, Priority 1	X	X
Squaw Butte					
JUOC treatment		up to 73 Acres in Alt. II and Alt. III	Priority 1	X	X

Project Name	Pasture	Description	Comment	Alternative II	Alternative III
Whitley Canyon					
Well and Pipeline	Petes Mountain	Well, ppl., and trough for livestock distribution - cattle congregate in the bottom - improves columbia spotted frog habitat.	0.83 miles, 2 troughs	X	X
Medusa Treatment	Petes Mountain	Burn Spray seed--600 acres	limit to areas of infestation - retain shrubs	X	X
JUOC treatment	ALL	up to 12,086 Ac. Alt. II, 1,800 Ac. Alt. III	Alt. II, Priority 2-4, Alt. III, Priority 2	X	X
Grasshopper Flat Spring	Burnt Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 4	X	X
Barrel Spring	Burnt Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 1a	X	X
Chitsey Spring	Petes Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	Priority 2	X	X
Pete's Mountain #1 Reservoir	Petes Mountain	Reservoir reconstruction lined with bentonite	BLM will re-survey and permittee will provide labor, equipment and materials	X	
Pete's Mountain Reservoir	Petes Mountain	Reservoir reconstruction lined with bentonite	BLM will re-survey and permittee will provide labor, equipment and materials	X	
Juniper Tree Reservoir	PJ #2	Reservoir reconstruction lined with bentonite	BLM will re-survey and permittee will provide labor, equipment and materials	X	
Lower Juniper Reservoir	PJ #2	Reservoir reconstruction lined with bentonite	BLM will re-survey and permittee will provide labor, equipment and materials	X	

Priorities defined for spring projects:

Priority 1 = a) proposed hot season livestock use and not functioning properly due to livestock grazing and/or b) Special Status species present

Priority 2 = proposed non-hot season livestock use and not functioning properly due to livestock grazing

Priority 3 = a) not functioning properly due to reasons other than livestock use, b) functioning properly, or c) not assessed

Priority 4 = could not find development while completing assessment work; if not found in future this project would be removed from BLM's files

Note: The springs in this list can change priority level due through the adaptive management process.

Priorities defined for Juniper treatments:

Priority 1 = Areas consisting of western juniper encroachment within a two mile radius of a known sage grouse lek, that were also identified in the SRH evaluation as deviating from site potential due to encroachment.

Priority 2 = Areas consisting of lands that were identified solely to remedy issues associated with the deviation from site potential as a result of western juniper invasion, but are expected to progress toward desired conditions quicker than areas in priority 3. These areas would include mountain big sagebrush communities, mountain mahogany and bitterbrush communities, aspen and pine forests.

Priority 3 = Areas consisting of western juniper invasion that will require greater input of funds and staffing but also exhibit indicators of degradation due to the encroachment (areas in Wyoming big sagebrush communities and areas in lower elevation that may require seeding after treatment).

Priority 4 = Areas with exotic annual species dominating the understory vegetation/areas for long term treatment consideration that would require the greatest input of funds (Wyoming sagebrush/cheatgrass communities).

13.5 Appendix E - Project Implementation Timeline

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Agency Mountain				
Agency Mountain Div. Fence	Agency Mountain	Diagonal Fence to split pasture to improve distribution.	2007-2008	X
JUOC treatment	All	up to 2,525 Acres	2009-2018	
Agency Spring	Agency Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed.	2009-2018	
Allot. # 6				
JUOC treatment	Juniper Gulch	Treat Putr sites and buffer - winter/spring burn only individual trees	2007-2008	2000 ac. In 2007-2008
Well and Pipeline	Juniper Gulch	Well, ppl., and trough for winter livestock distribution.	2009-2011 if needed	X
Red Willow Spring	Juniper Gulch	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Horseshoe Bend Rec.	Malheur River	Camp/fee site, <10 camp sites, trail, rocked road, gate @ hwy., parking area	As funding and staff time permit	
Reservoirs (Stemler Ridge, Adobe, Dugout, and unnamed)	Juniper Gulch	Bentonite all	2007-2008	X
Horseshoe Bend Spring	Juniper Gulch	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Beulah				
Poverty Flat Spring	Lower Poverty	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Grasshopper Spring	Upper Poverty	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Moonshine Spring	Moonshine	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
TJ Spring	Moonshine	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
unnamed spring	Jack Creek	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Jack Spring	Jack Creek	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Crickett Spring	FFR		2009-2018	
North Homestead Division Fence	North Homestead	Construct new fence adjacent to a road which will effectively split the North Homestead pasture in half (thus North East Homestead and North West Homestead)	2007-2008	X
Upper Poverty/Jack Creek Fence	Upper Poverty	Fence to complete pasture perimeter	2007-2008	X
Lower Poverty/Jack Creek Fence	Lower Poverty	Fence to complete pasture perimeter	2007-2008	X
Hardway Pit Reservoir	Antelope	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Hump Pit Reservoir	Upper Poverty	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Little Seeding Mow	Little Seeding	Sagebrush Mow	2007-2008	X
Big Seeding Mow	Big Seeding	Sagebrush Mow	2007-2008	X
Mud Springs Fence	Mud Springs	Reconstruct 0.5 mile of a division fence	2007-2008	X
JUOC treatment	ALL	Juniper Treatment	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Calf Creek				
Boulder Spring #1	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Indian Spring	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Poverty Spring	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Juniper Tree Spring	Dishrag	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Boulder Spring #2	Lake Ridge	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Dishrag Spring	Lake Ridge	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Chalk Spring	Chalk Camp	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Cherry Spring	Chalk Camp	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Lake Ridge Spring Pit	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Burnt Mountain Pit Reservoir	Dishrag	Abandon reservoir and make into spring development. Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Lake Ridge Charco Pit	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Boulder Pit Reservoir	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Dishrag Pit Reservoir	Dishrag	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Reservoir in Sec 27 of	Stemler Basin	Abandon reservoir and reclaim area	2007-2008	X
Lower Heifer Reservoir	Stemler Basin	Abandon reservoir and reclaim area	2007-2008	X
Lowest Heifer Reservoir	Stemler Basin	Abandon reservoir and reclaim area	2007-2008	X
Superstition (Fence) Reservoir	Stemler Basin	Abandon reservoir and reclaim area	2007-2008	X
JUOC treatment	ALL	Juniper Treatment	2009-2018	
Cave Creek Rim Fence	Cave Creek	Construct 1.0 mile of gap fencing	2007-2008	X
Lower Calf Creek Division Fence	Lower Calf Creek	Make permanent 1.8 miles of existing fence	2007-2008	X
Aspen	Dishrag	Jackstraw juniper and/or Rx Fire	2009-2018	
Castle Rock				
JUOC treatment	ALL	up to 11,075 Ac.	2007-2018	1000 ac.
Castle Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut. *	2009-2018	
Log Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut. *	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
WSA Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
unknown Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Horse Flat Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Harney Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Clevenger Butte Spring #1	Clevenger Butte #1	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Clevenger Butte Spring #2	Clevenger Butte #2	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
unknown Spring	Clevenger Butte #3	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
unknown spring (T16S, R37E, Sec. 20 se)	Clevenger Butte 2	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Fox Spring	Duck Pond	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Charcoal Spring	Duck Pond	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
unknown spring (Laddie Lake)	Duck Pond	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Shale Spring	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Malheur Spring	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Malheur Spring #2	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Twin Juniper Spring	Poison	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Lost Creek Spring	Heifer	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Iris Spring (Middle Heifer)	Heifer	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
unknown spring/reservoir	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Lost Creek Spring #1740	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Castle Rock Spring	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Hat Butte Pit/Spring	Hat Butte	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Castleview Spring	Sheep Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Camp Spot Spring	Sheep Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Green Spot Spring	do not know whose allotment this is in		2009-2018	
Aspen		Jackstraw juniper and/or Rx Fire. Within WSA, Rx Fire only.	2009-2018	
Mountain Mahogany	Castle Rock	Treated appropriately with fire, mechanical, and temporary fencing. No treatment within WSA.	2009-2018	
Chukar Park				
Chukar Park Rec. NEW		Pull-out north of CP, rocked road, unimproved camping allowed.	As funding and staff time allow.	
Chukar Park Rec. Site - update		Improvements would include though not be limited to: developing 3 -5 additional individual camp sites north of the 2 restrooms adjacent to campsite number four (should future use demands indicate their need); installing a septic system (or gray/dark water	As funding and staff time allow	
Cottonwood Creek				
JUOC treatment	ALL	up to 853 Ac.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Dearmond-Murphy				
Division Fence	Castle Rock	Reconstruct fence East of Jerry Canyon to a point south of Castle Rock Guard Station, construct new fence west to allotment boundary.	2007-2008	X
Hunter Spring Rec. Devel.	Castle Rock/New Jerry Cyn.	Enlarge Excl., 10 sites, 1 vault toilet, rock access	As funding and staff time allow	
Hunter Spring/Castle Rock Trail	Jerry Cyn	Discovery trail - not advertised or signed	As funding and staff time allow	
Castle Rock Guard Station	Castle Rock	Fee campsite w/ 10 sites, fence/cattleguard, new vault toilets	As funding and staff time allow	
Division Fence	Beulah Seeding	Fence off east private lands	2007-2008	X
JUOC Treatment	ALL	up to 23,622 Ac.	2007-2018	3000 ac. In 2007-2008
Mountain Mahogany	DeArmond - Murphy Allotment	Treated appropriately with fire, mechanical and/or exclusion. Within WSA, no treatment.	2009-2018	
Medusa/BRTE Treatment	Beulah Seeding	treat medusahead on approx 600 acres and replace native grasses+ forb(s)	2008-2010	X
Aspen	DeArmond - Murphy Allotment	treated appropriately with fire, mechanical and/or exclusion. Within WSA, Rx fire only.	2009-2018	
Rodeo Spring	Mahogany Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Reds Spring	Mahogany Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Duke Spring	Pole Gulch	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Hunter Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Mouse Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Irish Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Jerry Canyon Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Hunter Creek Spring #1	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Hunter Creek Spring #2	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Hunter Creek Spring #3	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Little Mouse Spring	Castle Rock	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Wilson Spring	Hunter Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Hunter Mountain Spring	Hunter Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
C. C. Spring	Hunter Creek	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Lower Morton Spring	Morton	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Upper Morton Spring	Morton	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Ed Spring	Morton	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Rattlesnake Spring	North Munker	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Mahogany Pit Reservoir	Mahogany Mountain	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Juniper Spring Pit Reservoir	Pole Gulch	Abandon reservoir and make into spring development. Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Big Buck Pit	North Munker	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	

Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Four Point Pit Reservoir	North Munker	Fence water source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Bateman Reservoir	Castle Rock	Abandon reservoir	2007-2008	X
Basin Reservoir	School Section	Abandon reservoir, reclaim area	2007-2008	X
Ironside Mountain East				
JUOC treatment		up to 1,094 Acres	2009-2018	
Ironside Mountain West				
JUOC treatment		up to 110 Acres	2009-2018	
Kivett				
JUOC treatment		up to 241 Acres	2009-2018	
Lockhart Mountain				
JUOC treatment		up to 1,033 Acres	2009-2018	
Malheur River				
unnamed Spring		Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
unnamed Spring		Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
RMP Extension Fence		Fence the Little Malheur River.	2007-2008	X
JUOC treatment		up to 1,091 Acres	2009-2018	
Ring Butte				
unnamed Spring		Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
JUOC treatment		up to 312 Acres	2009-2018	
South Willow Creek				
JUOC treatment		up to 1,028 Acres	2009-2018	
Squaw Butte				
JUOC treatment		up to 73 Acres	2009-2018	

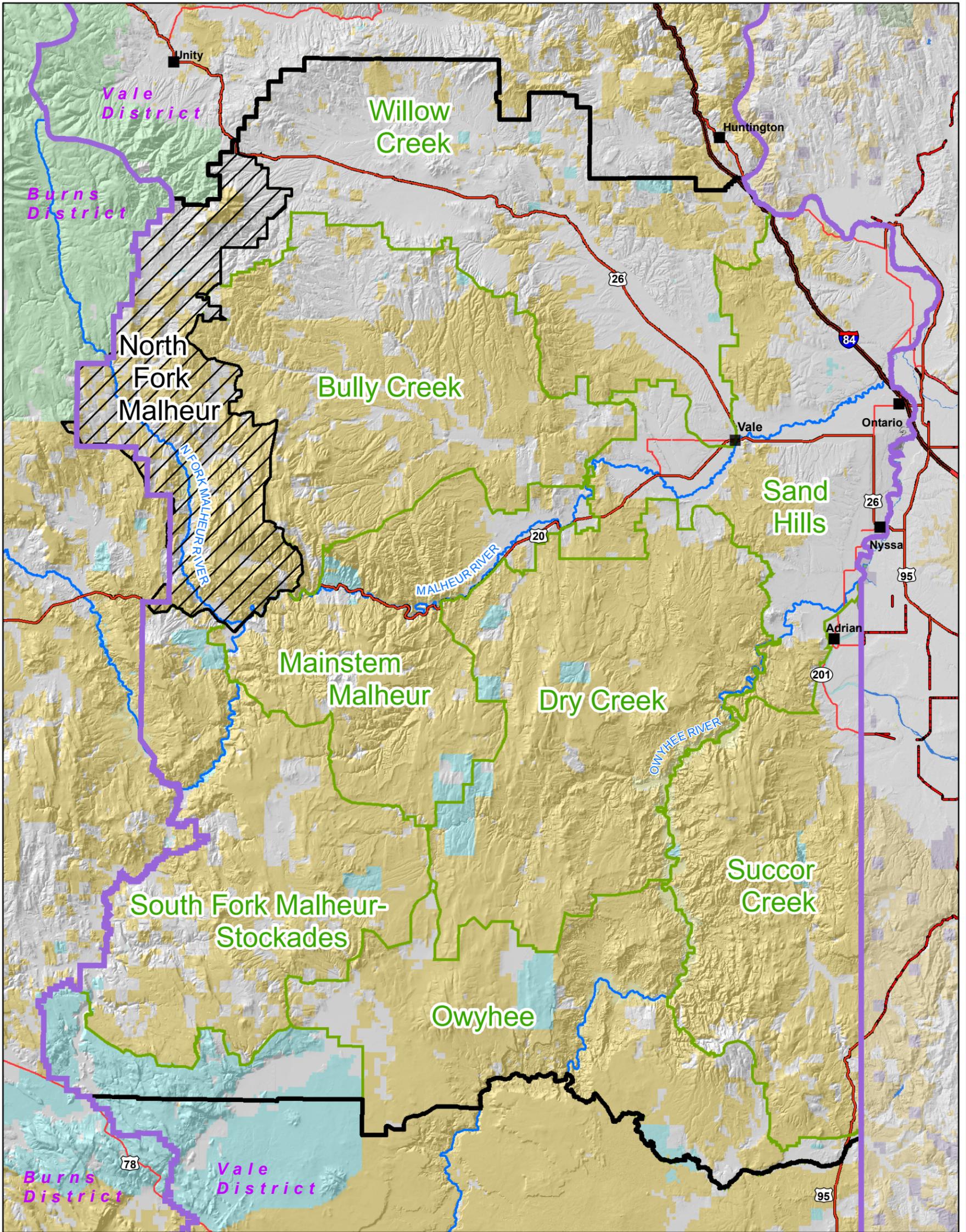
Project Name	Pasture	Project Description	Anticipated Year of Implementation	Funding Secured
Whitley Canyon				
Well and Pipeline	Petes Mountain	Well, ppl., and trough for livestock distribution - cattle congregate in the bottom - improves columbia spotted frog habitat.	2007-2008	X
Medusa Treatment	Petes Mountain	Burn Spray seed--600 acres	2008-2010	X
JUOC treatment	ALL	up to 12,086 Ac.	2009-2018	
Grasshopper Flat Spring	Burnt Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Barrel Spring	Burnt Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2007-2008	X
Chitsey Spring	Petes Mountain	Fence spring source and pipe H2O off site. Wildlife ladders installed, JUOC cut.	2009-2018	
Pete's Mountain #1 Reservoir	Petes Mountain	Reservoir reconstruction lined with bentonite	2007-2008	X
Pete's Mountain Reservoir	Petes Mountain	Reservoir reconstruction lined with bentonite	2007-2008	X
Juniper Tree Reservoir	PJ #2	Reservoir reconstruction lined with bentonite	2007-2008	X
Lower Juniper Reservoir	PJ #2	Reservoir reconstruction lined with bentonite	2007-2008	X

13.6 Appendix F - Acronyms

Refer to the list below for acronyms that may have been used in this document.

ACEC	area of critical environmental concern
AMP	allotment management plan
AMR	appropriate management response
AUM	animal unit month
BA	biological assessment
BLM	Bureau of Land Management
BMP	best management practice
BO	biological opinion
BOR	Bureau of Reclamation
C	custodial (with reference to allotment categorization)
CFR	“Code of Federal Regulations”
CU	classification units
DEQ	Department of Environmental Quality
DRFC	desired range of future conditions
EA	environmental assessment
ESA	“Endangered Species Act”
ESI	ecological site inventory
FARD	functioning at risk, trend downward
FARN	functioning at risk, trend not apparent
FARU	functioning at risk, trend upward
FLPMA	“Federal Land Policy and Management Act”
FFR	fenced federal range
FMP	fire management plan
FRCC	fire regime condition class
GIS	geographic information system
GMA	geographic management area
GTR	green tree replacement
HMP	habitat management plan
HUC	hydrologic unit code
I	improve (with reference to allotment categorization)
ICBEMP	Interior Columbia Basin Ecosystem Management Project
IDT	interdisciplinary team
IMP	“Interim Management Policy”
INFISH	Inland Native Fish Strategy
LMZ	lower management zone
M	maintain (with reference to allotment categorization)
MFP	management framework plan
MRA	Malheur Resource Area
NEPA	“National Environmental Policy Act”
NF	non-functioning
NFMGMA	North Fork Malheur River Geographical Management Area
NRCS	Natural Resource Conservation Service
NWSR	National Wild and Scenic River
NWSRS	National Wild and Scenic Rivers System
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
OHV	off-highway vehicle
ONHIC	Oregon Natural Heritage Information Center
ORV	outstandingly remarkable value
OWEB	Oregon Watershed Enhancement Board

PFC	proper functioning condition
PNC	potential natural community
PSEORMP/FEIS	“Proposed Southeastern Oregon Resource Management Plan/Final Environmental Impact Statement”
PUP	pesticide use proposal
RCA	riparian conservation area
RMO	riparian management objective
RMP	resource management plan
ROD	record of decision
ROW	right-or-way
SEORMP	“Southeastern Oregon Resource Management Plan”
SMA	special management area
S&Gs	standards for rangeland health
STEX	stream enclosure
T&E	threatened and endangered
TNR	temporary non-renewable
TMDL	total maximum daily load
UMZ	upper management zone
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
VRM	visual resource management
WAFWA	Western Association of Fish and Wildlife Agencies
WSA	wilderness study area
WSR	wild and scenic river



Legend

- | | |
|---------------------------|-----------------------------|
| District Boundary | Interstate Highway |
| Malheur Resource Area | State Highway |
| GMA Boundaries | US Highway |
| Assessment Area | Rivers |
| Land Status | Small Towns and Communities |
| Bureau of Land Management | |
| Bureau of Reclamation | |
| Forest Service | |
| Private | |
| State | |



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



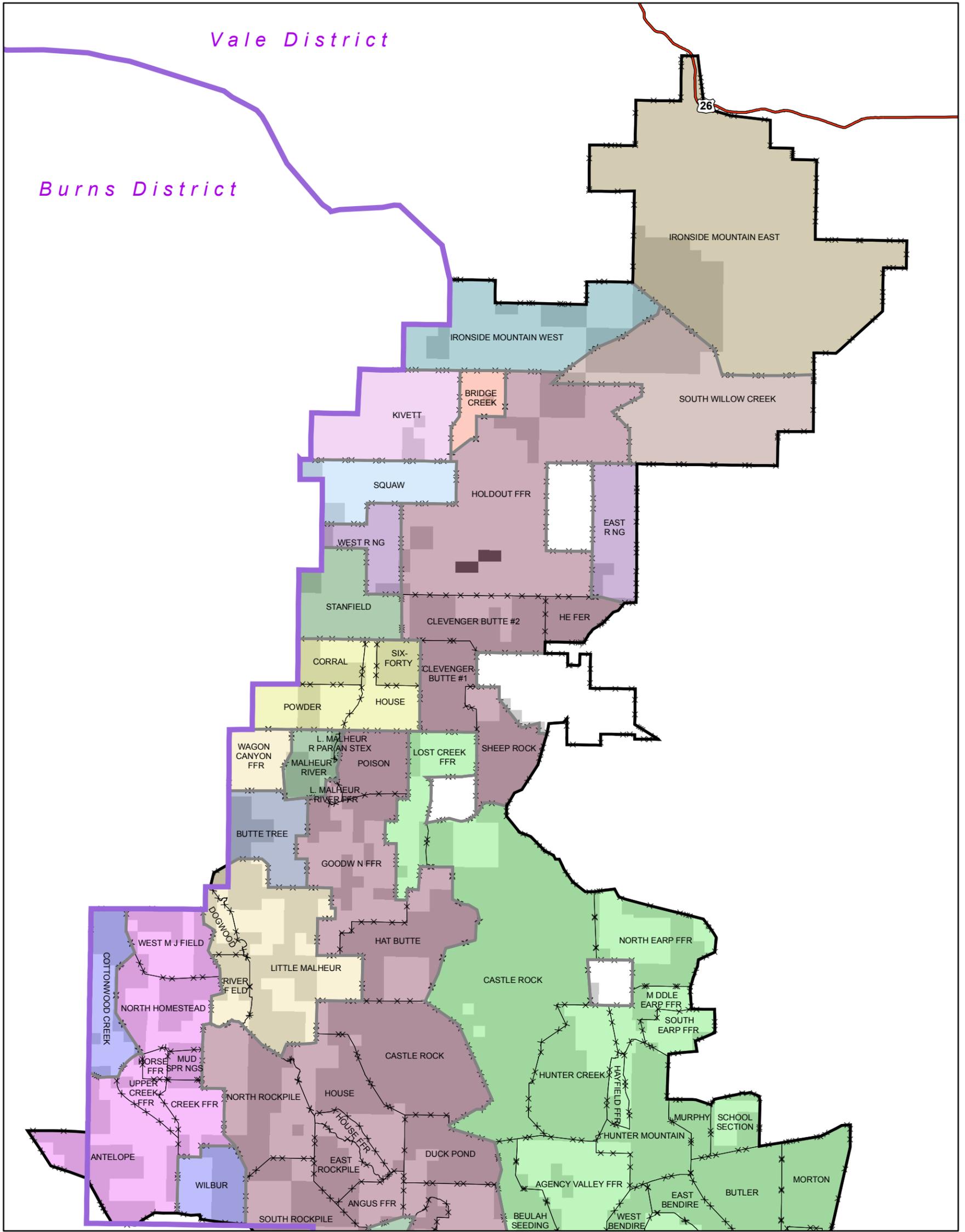
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

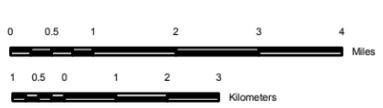
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

**Map 1 - Geographic Management Areas
In Malheur Resource Area**



Legend

- | | | |
|---------------------------|------------------------|------------------------|
| District Boundary | Allotments | IRONSIDE MOUNTAIN WEST |
| Assessment Boundary | AGENCY MOUNTAIN | KIVETT |
| Allotment Boundaries | BEULAH RESERVOIR | LOCKHART MOUNTAIN |
| Pasture Boundaries | BRIDGE CREEK | MALHEUR RIVER |
| Land Status | BUTTE TREE | RING BUTTE |
| Bureau of Land Management | CASTLE ROCK | SOUTH WILLOW CREEK |
| Bureau of Reclamation | COTTONWOOD CREEK | SQUAW BUTTE |
| Other Federal Lands | DEARMOND-MURPHY | WHITLEY CANYON |
| US Forest Service | IRONSIDE MOUNTAIN EAST | UNALLOTTED |
| Bureau of Indian Affairs | | |
| Private/Other Lands | | |
| State | | |



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



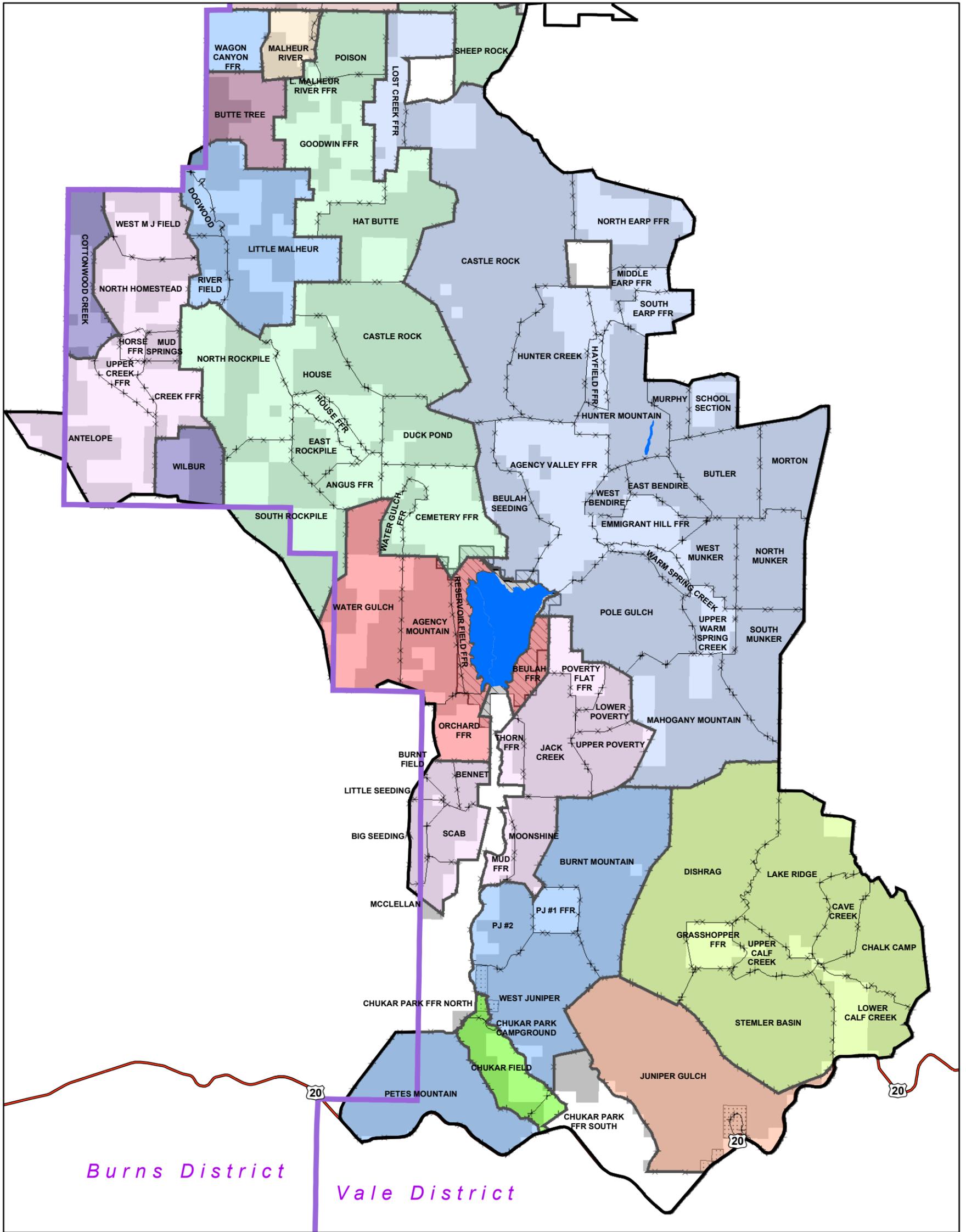
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 2 - North Half Grazing Allotments And Pastures With Land Status



Legend

- District Boundary
 - Assessment Boundary
 - Allotment Boundaries
 - Pasture Boundaries
 - Land Status**
 - Bureau of Land Management
 - Bureau of Reclamation
 - Other Federal Lands
 - US Forest Service
 - Private/Other Lands
 - State
- | Allotment Name | Allotment Name | Allotment Name |
|------------------|-------------------|----------------|
| AGENCY MOUNTAIN | COTTONWOOD CREEK | CHUKAR PARK |
| ALLOTMENT #6 | DEARDORN-MURPHY | CASTLE ROCK |
| BEULAH RESERVOIR | LOCKHART MOUNTAIN | Unallotted |
| BUTTE TREE | MALHEUR RIVER | |
| CALF CREEK | WHITLEY CANYON | |

Map 3 - South Half Grazing Allotments And Pastures With Land Status



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

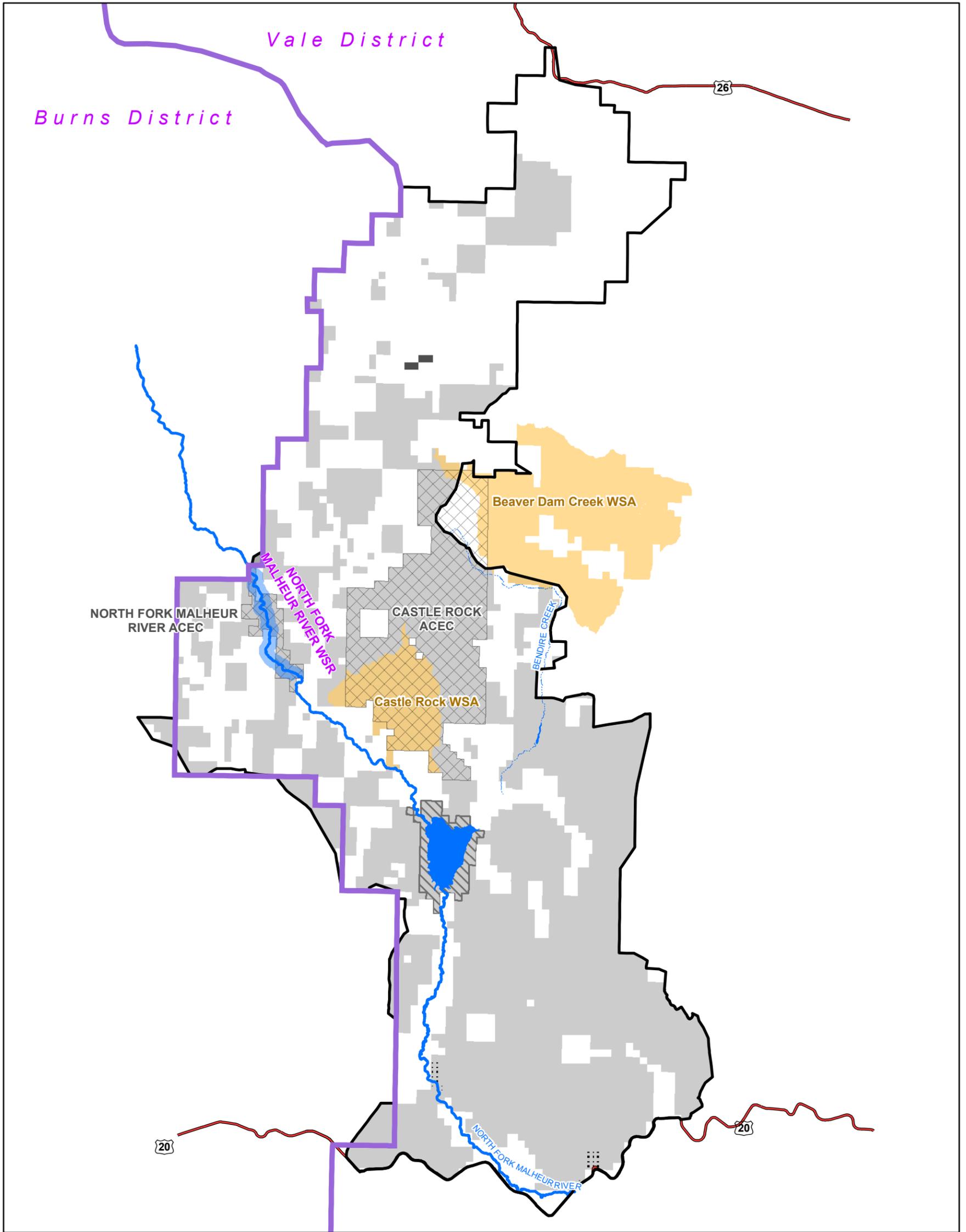


VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



Legend

- | | |
|----------------------------------------|---------------------------|
| District Boundary | Bureau of Land Management |
| Assessment Boundary | Bureau of Reclamation |
| Wild and Scenic Study River | Other Federal Lands |
| Area of Critical Environmental Concern | US Forest Service |
| Wilderness Study Area | Private/Other Lands |
| US Highway | State |
| River | |
| Creek | |



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



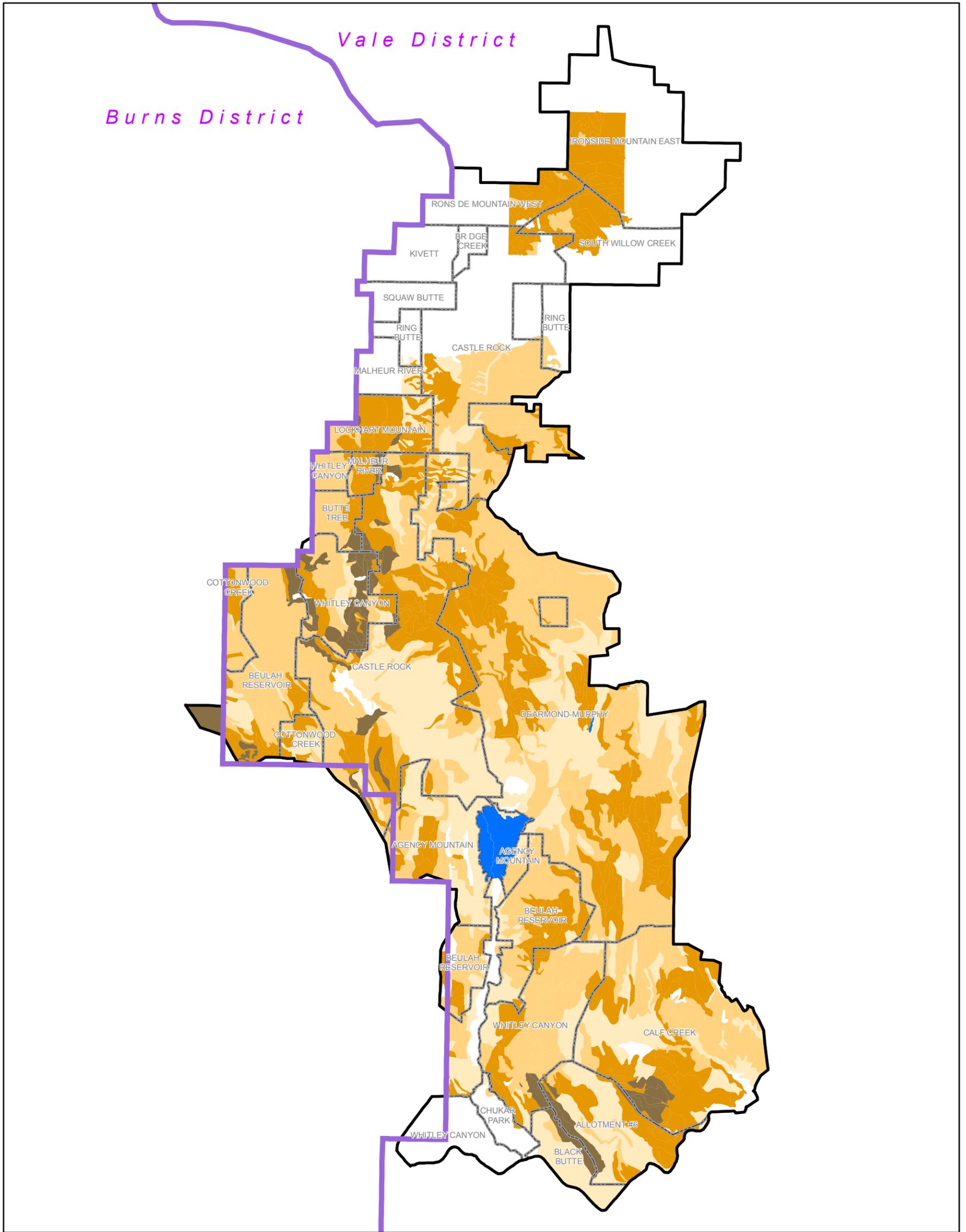
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 4 - Special Management Areas



Legend

- District Boundary
- Assessment Boundary
- Allotment Boundary

Vegetation (SVIM) - Ecological Status

Current as of 1978

- Early Native
- Mid Native
- Late Native
- Potential Natural Community



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



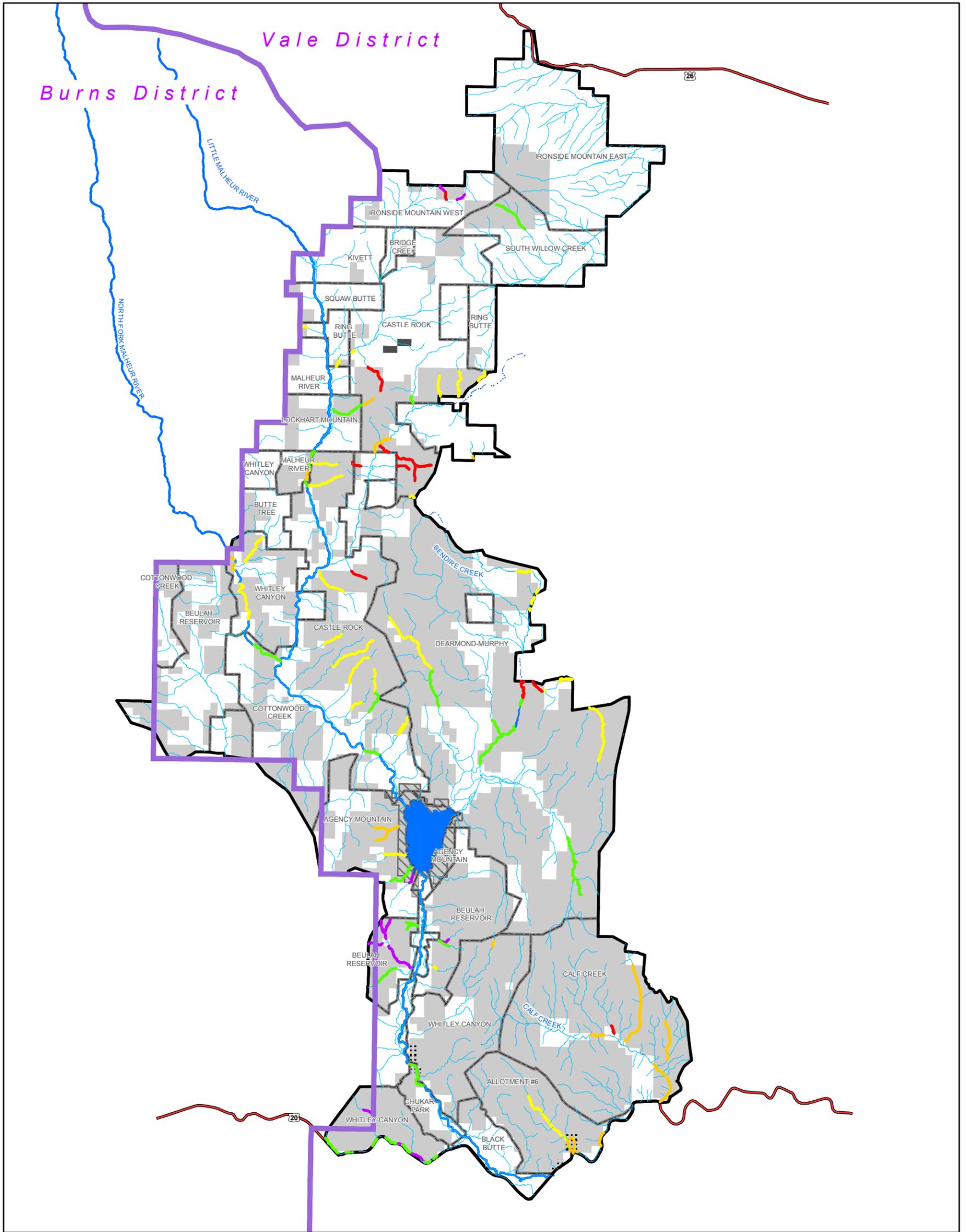
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 5 - Vegetation - Ecological Status



Legend

- District Boundary
- Allotment Boundaries
- Assessment Boundary
- Land Status**
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal Lands
- US Forest Service
- Private/Other Lands
- State

Streams PFC Code

- PFC
- FARU
- FARN
- FARD
- NF
- No PFC Rating

Major Waterways

- Rivers
- Creeks



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



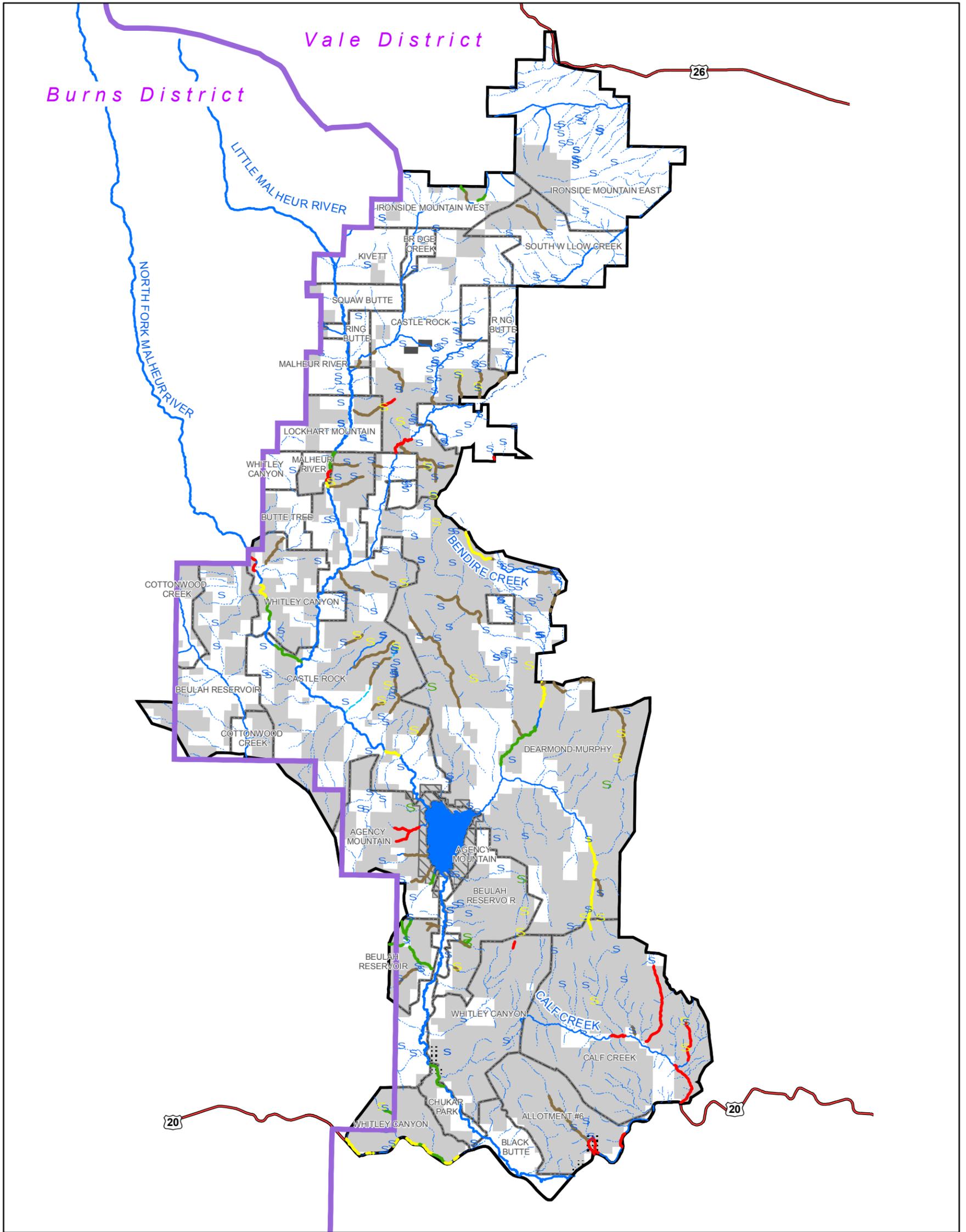
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

Map 6 - Riparian Areas by Functioning Condition

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



Legend

- District Boundary
- Assessment Area
- Allotment Boundaries
- Land Status**
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal Lands
- US Forest Service Private/Other Lands
- State
- Rivers
- Creeks
- Riparian Trend**
- Up
- Static
- Down
- Unknown
- Springs PFC Code**
- PFC
- FARN
- FARD
- NF
- No PFC rating



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



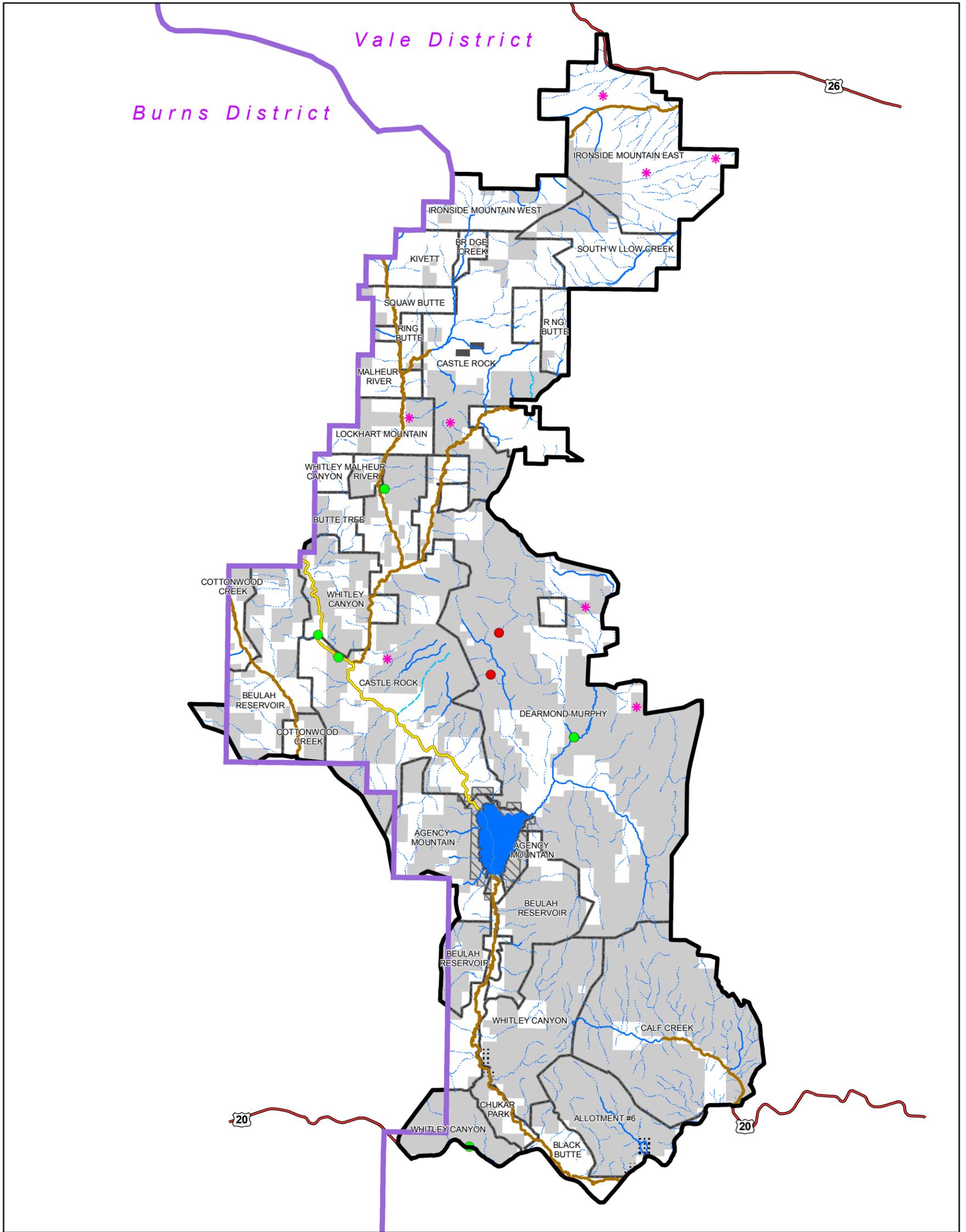
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

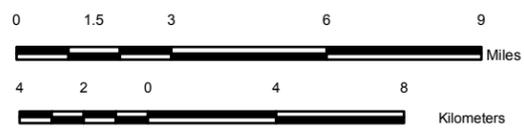
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 7 - Riparian Areas by Trend With Springs by Functioning Condition



Legend

- District Boundary
- Assessment Boundary
- Allotment Boundary
- Land Status**
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal Lands
- US Forest Service
- Private/Other Lands
- State
- US Highway
- Streams**
- Continuous Ephemeral
- Continuous Perennial
- Continuous Seasonal
- Interrupted Perennial
- Interrupted Seasonal
- Red Band Trout Streams
- Bull Trout Streams
- Western Toad
- Columbia Spotted Frog
- Sage Grouse Leks



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



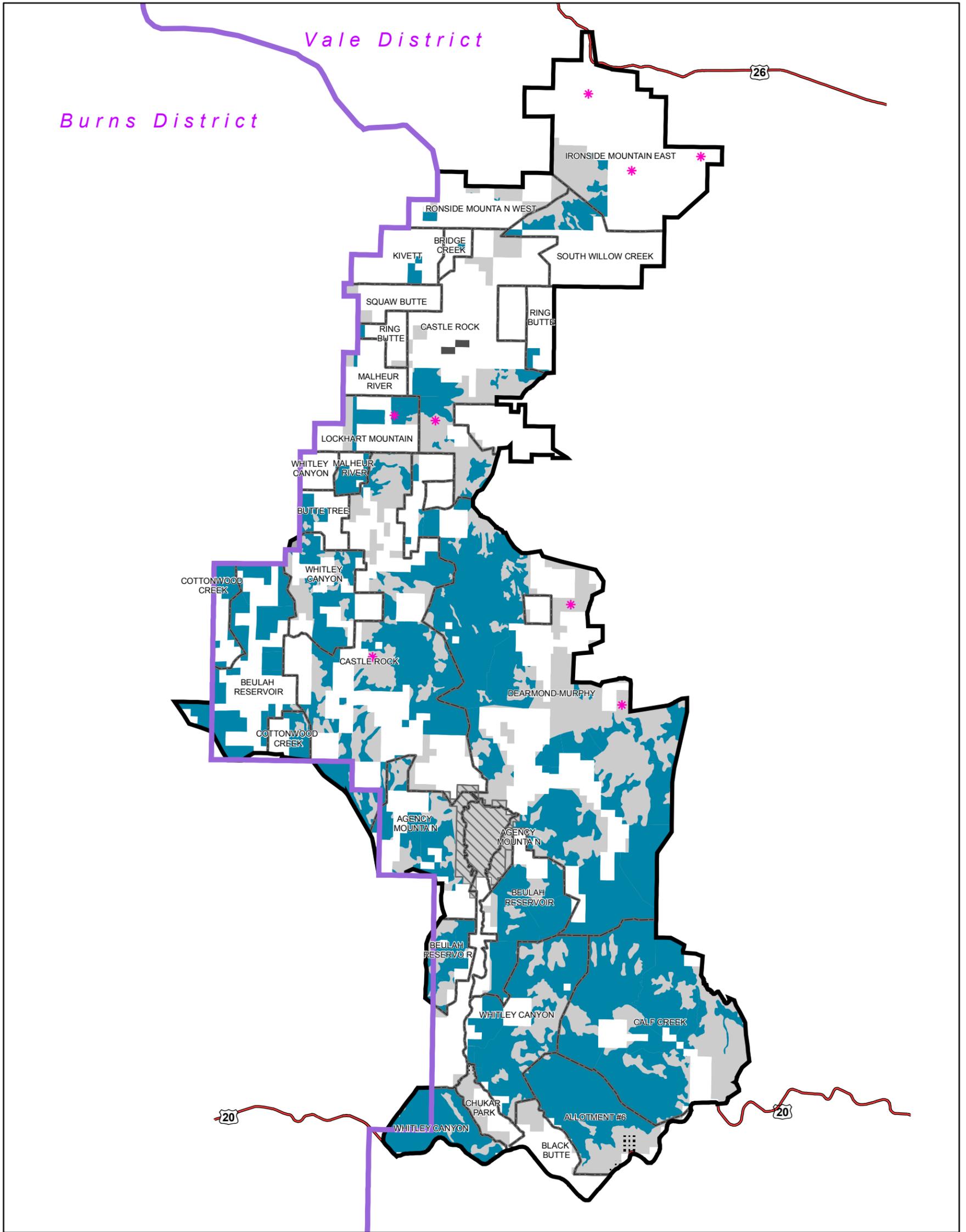
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 8 - Fish Bearing Streams and Special Status Species



Legend

- District Boundary
- Assessment Area
- Allotment Boundary
- US Highway
- Western Juniper Mgmt Areas
- * Sage Grouse Leaks
- Bureau of Land Management
- Bureau of Reclamation
- Other Federal Lands
- US Forest Service
- Private/Other Lands
- State



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



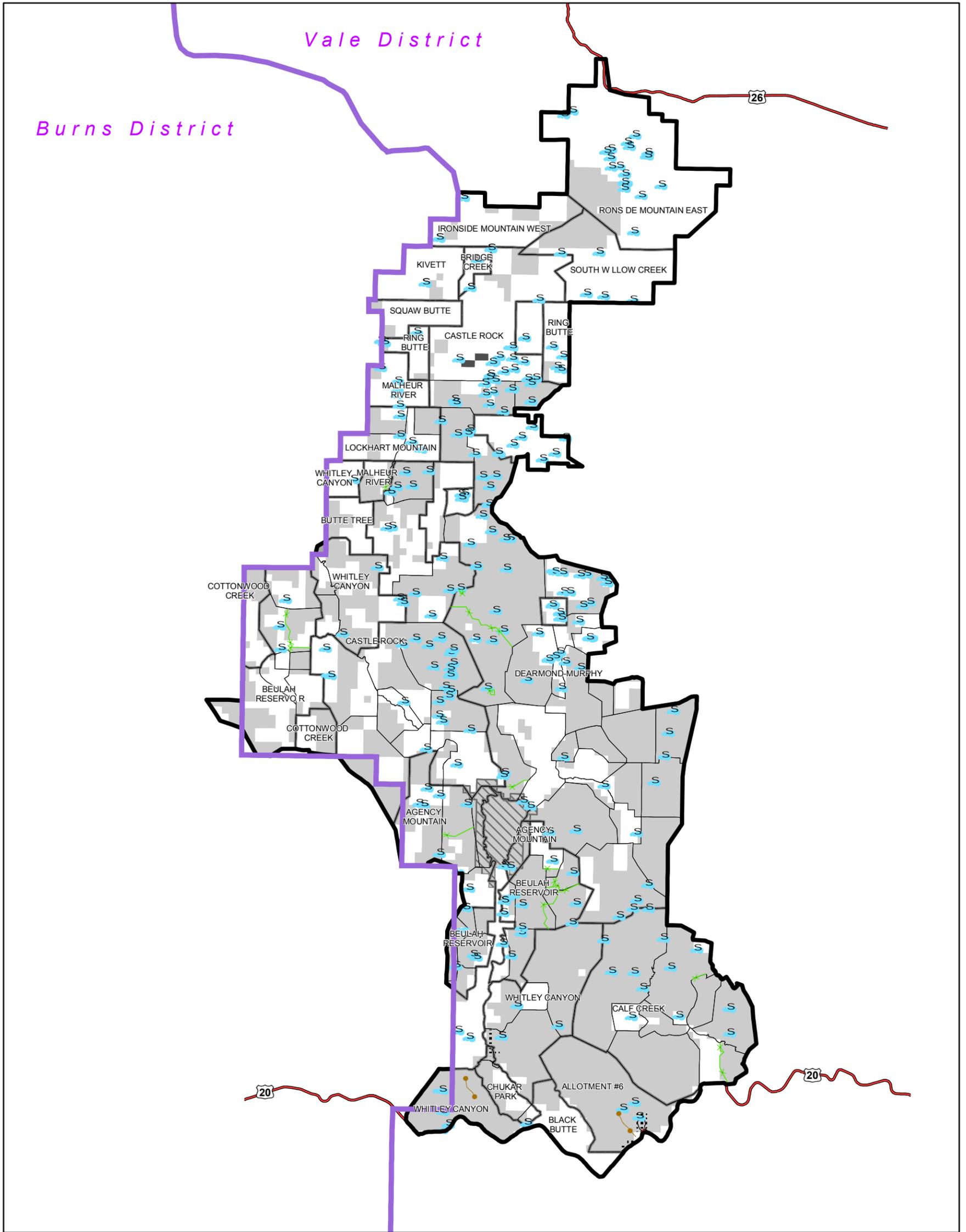
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

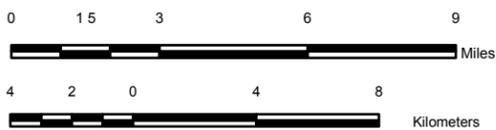
**Map 9 - Alternative II Western Juniper
Management Areas**

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



Legend

- | | |
|----------------------|---------------------------|
| District Boundary | Land Status |
| Assessment Boundary | Bureau of Land Management |
| Allotment Boundary | Bureau of Reclamation |
| Pasture Boundary | Other Federal Lands |
| US Highway | US Forest Service |
| Projects | Private/Other Lands |
| New Fence | State |
| New Pipeline | |
| Spring Redevelopment | |



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



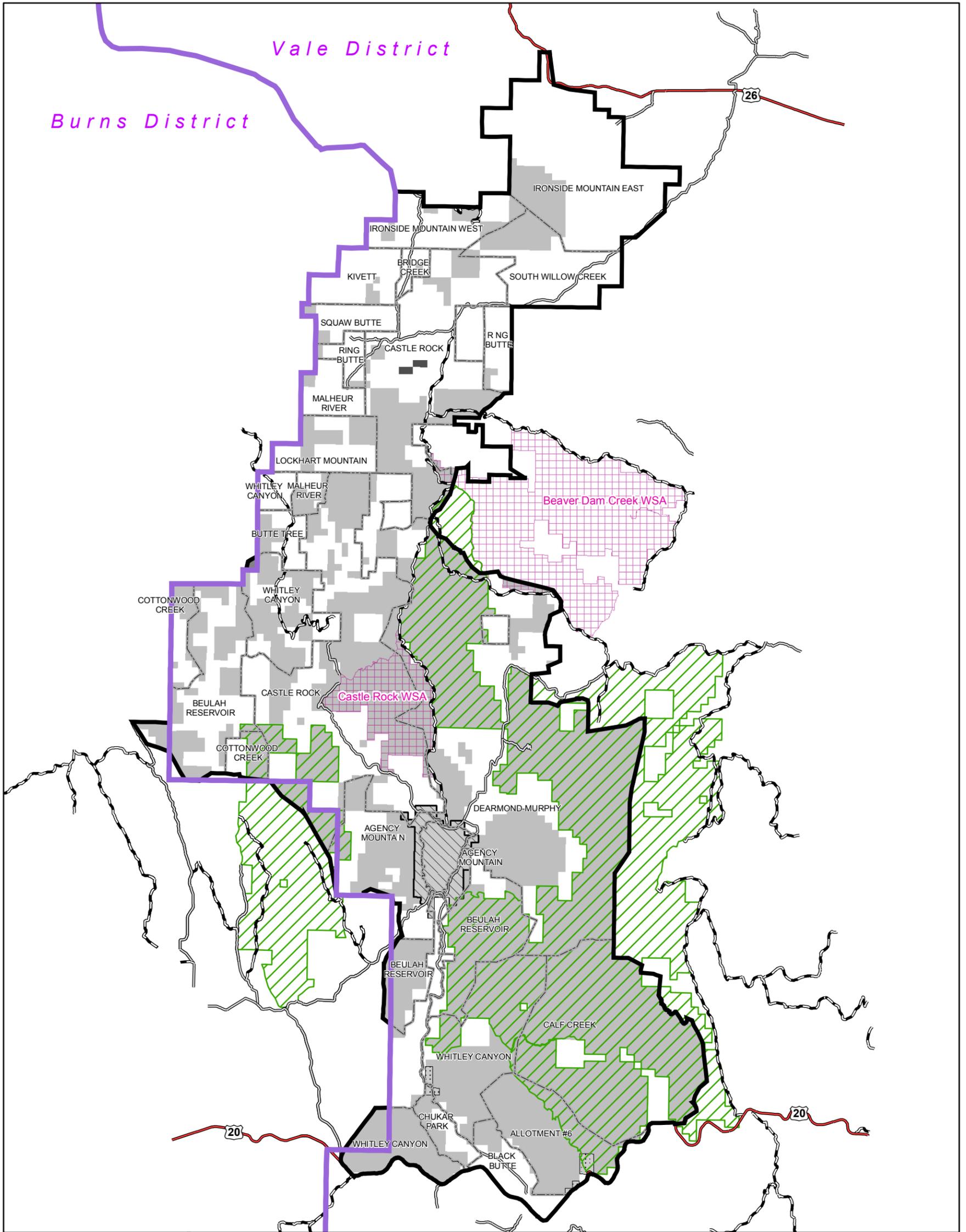
VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

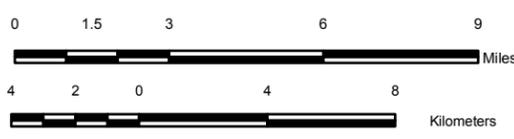
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 10 - Alternative II Projects



Legend

- | | |
|-----------------------------|---------------------------|
| District Boundary | Bureau of Land Management |
| Assessment Boundary | Bureau of Reclamation |
| Allotment Boundaries | Other Federal Lands |
| BLM Wilderness Study Areas | US Forest Service |
| Citizen Proposed Wilderness | Bureau of Indian Affairs |
| | Private/Other Lands |
| Roads | State |
| US Highway | |
| County | |
| BLM | |



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



VALE DISTRICT

**North Fork Malheur River
Geographic Management
Area
Environmental Assessment**

2007

**Map 11 - Citizen Wilderness Study
Area Proposals**

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.