Preliminary Application for Site Certificate for the Muddy Creek Energy Park

Exhibit I. Scenic Resources

Submitted to the
Oregon Energy Facility Siting Council

Prepared for
Muddy Creek Energy Park, LLC

Prepared by

TETRA TECH

1750 S Harbor Way, Suite 400 | Portland, OR 97201

May 2026

Table of Contents

1.0 Introduction 1
2.0 Analysis Area 1
3.0 Scenic Resources Inventory – OAR 345-022-0080(5)(a)(b) 1
3.1 Municipalities 5
3.1.1 Brownsville 5
3.1.2 Coburg 5
3.1.3 Eugene 5
3.1.4 Halsey 5
3.1.5 Harrisburg 6
3.1.6 Junction City 6
3.2 Counties 6
3.2.1 Lane County 6
3.2.2 Linn County 7
3.3 State 7
3.3.1 Oregon Department of Transportation 7
3.3.2 Oregon Natural Heritage Areas Program 8
3.4 Tribal 8
3.5 Regional 8
3.6 Federal 9
3.6.1 Bureau of Land Management 9
3.6.2 National Park Service 9
4.0 Visual Impacts 10
4.1 Methodology – OAR 345-022-0080(5)(c) 10
4.1.1 Zone of Visual Influence Analysis 11
4.1.2 Glare Analysis 12
4.2 Visual Impacts – OAR 345-022-0080(5)(d)(e) 14
4.2.1 Coburg Ridge/Hills 15
4.2.2 Willamette River Greenway/ Willamette Harrisburg Bridge 15
4.2.3 Muddy Creek 16
4.2.4 Over the Rivers and Through The Woods Scenic Byway 17
4.2.5 McGowan Meadow ACEC 17

4.2.6 Horse Rock Ridge RNA/ACEC 17
4.2.7 Visual Resource Management Class II Lands 18
4.3 Glare Analysis Results 19
4.3.1 Analysis 1 – 1st-Story Receptors 19
4.3.2 Analysis 2 – 2nd-Story Receptors 19
4.3.3 Summary of Glare Analysis Results 19
5.0 Avoidance and Mitigation Measures – OAR 345-022-0080(5)(f) 19
5.1 Project Planning and Design Measures 19
5.2 Landscape Treatment Measures 20
6.0 Monitoring – OAR 345-022-0080(5)(g) 21
7.0 References 21
8.0 Approval Standards and Submittal Requirements 24

List of Tables

Table I-1. Inventory of Scenic Resources in the Analysis Area 3
Table I-2. Viewshed Analysis Results for Cities Near the Facility 14
Table I-3. Approval Standards and Submittal Requirements 24

List of Figures

Figure I-1. Scenic Resources within the Analysis Area

Figure I-2. Scenic Resources Viewshed, Solar Array

Figure I-3. Scenic Resources Viewshed, Gen-tie

List of Attachments

Attachment I-1. Land Use Management Plan Excerpts

Attachment I-2. Glare Analysis Reports

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ACEC	Area of Critical Environmental Concern
Applicant	Muddy Creek Energy Park, LLC
ASC	Application for Site Certificate
BESS	battery energy storage system
BLM	Bureau of Land Management
EFSC	Oregon Energy Facility Siting Council
Facility	Muddy Creek Energy Park
kV	kilovolt
MW	megawatt
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OPRD	Oregon Parks and Recreation Department
ZVI	zone of visual influence

1.0 Introduction

Muddy Creek Energy Park, LLC (Applicant) seeks to develop the Muddy Creek Energy Park (Facility), consisting of a 150-megawatt (MW) solar energy generation facility, a 150-MW battery energy storage system (BESS) project, and related or supporting facilities on approximately 1,590 acres of private land in Linn County, Oregon. This Application for Site Certificate (ASC) demonstrates that the proposed Facility will be designed, constructed, and operated consistent with the relevant Oregon Energy Facility Siting Council (EFSC) siting criteria and standards. In addition to meeting the minimum required EFSC criteria, the Applicant proposes to design, construct, and operate the Facility using agrivoltaics. Agrivoltaics co-locates the Facility with active farm operations to retain agricultural production and minimize agricultural impacts within the Facility Site Boundary.

The information contained herein supports demonstration of compliance with the Scenic Resources approval standard for Oregon Administrative Rules (OAR) 345-022-0080.

2.0 Analysis Area

In accordance with OAR 345-001-0010(35)(b), and as defined in the Project Order (ODOE 2025), the analysis area for scenic resources is the area within and extending 10 miles from the Site Boundary (Figure I-1; ODOE 2025). The Site Boundary is defined in detail in the Background Information Exhibit and is shown on Figure I-1.

3.0 Scenic Resources Inventory – OAR 345-022-0080(5)(a)(b)

> *(5) To assist the Council in determining whether the standard outlined in (1) through (4) has been met, the Applicant must submit an analysis of potential visual impacts of the proposed facility, if any, on significant or important scenic resources within the analysis area, providing evidence to support a finding by the Council under OAR 345-022-0080, including:*
>
> > *(a) An inventory of scenic resources identified as significant or important in a land use management plan adopted by one or more local, tribal, state, regional, or federal government or agency applicable to lands within the analysis area for scenic resources. The applicant must provide a list of the land management plans reviewed in developing the inventory and a copy of the relevant portion of the plans;*
> >
> > *(b) A map or maps showing the location of the scenic resources described under subsection (a), in relation to the site of the proposed facility;*

This section inventories scenic resources identified as significant or important in local, tribal, state, regional, and federal land use management plans within the analysis area, as required to demonstrate compliance with the approval standard in OAR 345-022-0080. The analysis area

includes parts of six Oregon municipalities, two Oregon counties, four State Natural Heritage Areas, and land administered by the Oregon Department of Transportation (ODOT), Bureau of Land Management (BLM), and National Park Service (NPS).

The Applicant concludes that there are eight significant or important scenic resources within the analysis area, as identified through review of applicable land use management plans (see Table I-1). Note there are no scenic resources located within the Site Boundary as proposed. The following sections describe the applicable jurisdictions, their applicable/most current land use plans, and the determination as to whether visual resources in the analysis area are designated as significant or important. These descriptions are summarized in Table I-1 and the locations of identified scenic resources are shown on Figure I-1. Additionally, see Attachment I-1 for excerpts of land use management plans that discuss scenic resources located within the analysis area.

Table I-1. Inventory of Scenic Resources in the Analysis Area

Jurisdiction	Plan	Scenic Resources Specified in Plan (Y/N)?	Important or Significant Scenic Resources Identified in Analysis Area (Y/N)?	Name of Scenic Resource(s) in Analysis Area	Distance from Site Boundary (miles)			Location of Scenic Resources Discussed in Plan
					Site Boundary	Solar Array	Generation-tie Transmission Line	
Municipalities								
Brownsville	Brownsville Comprehensive Plan (City of Brownsville 1980)	No	No	N/A	N/A	N/A	N/A	N/A
Coburg	City of Coburg Comprehensive Plan (City of Coburg 2018) Coburg Zoning Code (City of Coburg 2025)	Yes	Yes	Coburg Ridge/Hills	7.1	7.5	8.5	Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources, Scenic Resources - Policy 6[1]
Eugene	Envision Eugene Comprehensive Plan (City of Eugene 2023) Land Use Code (City of Eugene 2025)	Yes	Yes	Willamette River Greenway	4.4	4.5	5.2	Land Use Code: Chapter 9.880, Willamette River Greenway Permits[1]
Halsey	Comprehensive Plan (City of Halsey 1990) Halsey Municipal Code (City of Halsey 2025)	No	No	N/A	N/A	N/A	N/A	N/A
Harrisburg	Comprehensive Plan (City of Harrisburg 2013)	Yes	Yes	Willamette River Greenway Willamette Harrisburg Bridge Muddy Creek	4.5 5.7 0.4	4.5 5.7 0.4	5.2 6.4 1.2	Volume 1: Natural Resources, Groundwater, Goal 15: Willamette Greenway Volume 2: Goal 5: Open Spaces and Historical Areas, and Natural Resources; Goal 15: Willamette Greenway[1]
Junction City	Junction City Comprehensive Plan (City of Junction City 2016) Junction City Municipal Code (City of Junction City 2025)	No	No	N/A	N/A	N/A	N/A	N/A
Counties								
Lane County	Lane County Rural Comprehensive Plan (Lane County 2024a) Lane Code (Lane County 2024b)	Yes	Yes	Coburg Ridge/Hills Willamette River Greenway	7.1 4.5	7.5 4.5	8.5 5.2	Comprehensive Plan: Part II, Goal Five: Open Spaces, Scenic and Historic Areas and Natural Resources, Open Spaces and Scenic Areas; Part II, Goal 15: Willamette River Greenway[1]
Linn County	Title 9: Subtitle 1 – Comprehensive Plan (Linn County 2025a) Title 9: Subtitle 2 – Land Development Code (Linn County 2025b)	Yes	Yes	Willamette River Greenway	4.5	4.5	5.2	Comprehensive Plan: Chapter 903 Natural Resources Element Code, IV Open Spaces, Scenic and Historical Areas, and Natural Resources; Chapter 905 Land Use Element

Jurisdiction	Plan	Scenic Resources Specified in Plan (Y/N)?	Important or Significant Scenic Resources Identified in Analysis Area (Y/N)?	Name of Scenic Resource(s) in Analysis Area	Distance from Site Boundary (miles)			Location of Scenic Resources Discussed in Plan
					Site Boundary	Solar Array	Generation-tie Transmission Line	
								Code, Section 905.700 Willamette River Greenway[1]
State								
ODOT	Oregon Highway Plan (ODOT 2023)	Yes	Yes	Over The Rivers and Through The Woods Scenic Byway	8.2	8.2	9.8	Policy 1D, Scenic Byways; Goal 5: Policy 5B: Scenic Resources[1]
The Nature Conservancy and Greenbelt Land trust – voluntarily registered State Natural Heritage Area	Oregon Natural Areas Plan (OPRD 2020), Oregon Parks and Recreation Department	No	No	N/A	N/A	N/A	N/A	N/A
Tribal								
None Applicable	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Regional								
Eugene / Springfield / Lane County	METRO PLAN Eugene-Springfield Metropolitan Area General Plan (City of Eugene et al. 2024)	Yes	Yes	Willamette River Greenway	4.5	4.5	5.2	Section III, C. Environmental Resources Element, D. Willamette River Greenway, River Corridors, and Waterways Element[1]
Federal								
BLM	Northwestern and Coastal Oregon Record of Decision/Resource Management Plan (BLM 2016)	Yes	Yes	McGowan Meadow ACEC Horse Rock Ridge ACEC/RNA Visual Resource Management Areas (VRM) Class II	3.7 6.0 3.0	3.9 6.0 3.0	4.7 8.4 4.9	Land Use Allocations, Visual Resource Management, Table F-4[1]
NPS	Comprehensive Management and Use Plan - Final Environmental Impact Statement (NPS 1999)	No	No	N/A	N/A	N/A	N/A	N/A

1. Excerpt from the land use management plan provided in Attachment I-1; note that excerpts are provided for any plan that is not only applicable to the analysis area but also contain a scenic resource within the analysis area.

3.1 Municipalities

3.1.1 Brownsville

The Brownsville Comprehensive Plan (City of Brownsville 1980) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. No associated City of Brownsville development or land use code was found online for review. Therefore, based on the content of the relevant land use management plan, the Applicant concludes that no features within the City of Brownsville have been identified as important or significant scenic and no such features are addressed in this Exhibit.

3.1.2 Coburg

The City of Coburg Comprehensive Plan (City of Coburg 2018) identifies the Coburg Ridge/Hills as a scenic resource under Goal 5, Open Spaces, Scenic and Historical Areas and Natural Resources (Policy 6), which is also within the analysis area (see Figure I-1). The Coburg Zoning Code (City of Coburg 2025) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the information provided through the relevant land use management plans, the Applicant concludes that the City of Coburg identifies the Coburg Ridge/Hills as significant or important scenic resources for inclusion in this Exhibit.

3.1.3 Eugene

The Envision Eugene Comprehensive Plan (City of Eugene 2023) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. The Land Use Code (City of Eugene 2025), however, designates the Willamette River Greenway as a scenic resource within the analysis area, which should be preserved for natural, scenic, historical, agricultural, economic, and recreational qualities (see Figure I-1; also evaluated as a protected area and recreation area in Exhibits E and K). Note that cities and counties are responsible for the implementation of Willamette River Greenway-associated land use management plans and compliance with Goal 15 (DLCD 2026). Therefore, based on the information provided through the relevant land use management plans, the Applicant concludes that the City of Eugene identifies the Willamette River Greenway as a significant or important scenic resource for inclusion in this Exhibit.

3.1.4 Halsey

The Halsey Comprehensive Plan (City of Halsey 1990) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Similarly, the Halsey Municipal Code (City of Halsey 2025) mentions compliance with the Statewide Planning Goals (i.e., Open Spaces, Scenic and Historical Areas and Natural Resources) and design provisions related to landscaping and screening, etc., but otherwise does not

list policies relating to preservation of specific scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the content of the relevant land use management plans, the Applicant concludes that no features within the City of Halsey have been identified as important or significant scenic and no such features are addressed in this Exhibit.

3.1.5 Harrisburg

The Harrisburg Comprehensive Plan (City of Harrisburg 2013) defines specific scenic resources including the Willamette River Greenway, Willamette Harrisburg Bridge, Muddy Creek and intermittent streams, all of which are within the analysis area (see Figure I-1; note that the Willamette River Greenway is also evaluated as a protected area and recreation area in Exhibits E and K). Note that cities and counties are responsible for the implementation of Willamette River Greenway-associated land use management plans and compliance with Goal 15 (DLCD 2026). The Plan also contains associated goals and policies related to the preservation of scenic resources, aligning with the Statewide Planning Goal 5 and 15 Statewide Planning Goals (i.e., Open Spaces, Scenic and Historical Areas and Natural Resources, and Willamette River Greenway). Therefore, based on the information provided through the relevant land use management plan, the Applicant concludes that the City of Harrisburg identifies the Willamette River Greenway, Willamette Harrisburg Bridge, and Muddy Creek as significant or important scenic resources for inclusion in this Exhibit.

3.1.6 Junction City

The Junction City Municipal Code (City of Junction City 2025) does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Similarly, the Junction City Comprehensive Plan (City of Junction City 2016) has design provisions related to landscaping, screening, etc., but otherwise does not list policies relating to preservation of specific scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the content of the relevant land use management plans, the Applicant concludes that no features within the City of Junction City have been identified as important or significant scenic and no such features are addressed in this Exhibit.

3.2 Counties

3.2.1 Lane County

The Lane County Rural Comprehensive Plan (Lane County 2024a) addresses Goal 5 and 15 Statewide Planning Goals (i.e., Open Spaces, Scenic and Historic Areas and Natural Resources, and Willamette River Greenway). Six major areas of outstanding scenic value, and federal wild and scenic rivers are identified in Lane County, two of which are located within the analysis area: Coburg Ridge/Hills and Willamette Greenway (see Figure I-1; note that the Willamette River Greenway is also evaluated as a protected area and recreation area in Exhibits E and K). Note that

cities and counties are responsible for the implementation of Willamette River Greenway-associated land use management plans and compliance with Goal 15 (DLCD 2026). The Lane Code (Lane County 2024b) on the other hand does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the information provided through the relevant land use management plans, the Applicant concludes that Lane County identifies the Coburg Ridge/Hills and Willamette Greenway as significant or important scenic resources for inclusion in this Exhibit.

3.2.2 Linn County

The Linn County Title 9: Subtitle 1 – Comprehensive Plan (Linn County 2025a) addresses goals and policies for scenic views and sites and for scenic water ways (including Goal 5 and 15 Statewide Planning Goals: Open Spaces, Scenic and Historical Areas and Natural Resources, and Willamette River Greenway) and also defines the McDowell Creek Falls Forest Park as a scenic resource. The Park is outside of the analysis area, however, the scenic Willamette River Greenway is located within the analysis area (see Figure I-1; note that the Willamette River Greenway is also evaluated as a protected area and recreation area in Exhibits E and K). Note that cities and counties are responsible for the implementation of Willamette River Greenway-associated land use management plans and compliance with Goal 15 (DLCD 2026). The Linn County Title 9: Subtitle 2 – Land Development Code (Linn County 2025b) on the other hand does not establish any goals or policies relating to preservation of scenic resources, scenic resource protection requirements, or designate any scenic areas. Therefore, based on the information provided through the relevant land use management plans, the Applicant concludes that Linn County identifies the Willamette River Greenway as a significant or important scenic resource for inclusion in this Exhibit.

3.3 State

3.3.1 Oregon Department of Transportation

The ODOT Oregon Highway Plan was adopted in 1999 and includes a comprehensive management approach for Oregon's multimodal transportation system (ODOT 2023). Last updated in 2023, the Plan is also currently under review, with the next version set to be released in 2027. Through the Plan, the Oregon Transportation Commission has designated State Scenic Byways throughout the state for roads with exceptional scenic values (ODOT 2023). The Over the Rivers and Through The Woods Scenic Byway is defined as one of the State Scenic Byways, which is inclusive of the portion of OR-228 that runs east from I-5 and is located within the analysis area (see Figure I-1; ODOT 2026). Therefore, based on the information provided through the Oregon Highway Plan, the Applicant concludes that ODOT identifies the Over the Rivers and Through The Woods Scenic Byway as a significant or important scenic resource for inclusion in this Exhibit.

3.3.2 Oregon Natural Heritage Areas Program

The Oregon Natural Heritage Areas Program was established under the Natural Heritage Act of 1979 (Oregon Revised Statutes 273.561-.591), with the first Oregon Natural Areas Plan published in 1981. A key goal of natural areas is to protect high-quality native ecosystems and rare plant and animal species. Private individuals or organizations are able to voluntarily designate their property as a natural area, with approval by the Parks Commission. The Coburg Ridge Preserve, Cogswell-Foster Preserve, and Horse Rock Ridge Preserve, owned and managed by The Nature Conservancy (TNC), were registered as part of the Oregon State Register of Natural Heritage Resources in 1988 (OPRD 2020); similarly, the Courtney Creek Preserve, owner and managed by the Greenbelt Land Trust was also registered as part of the Oregon State Register of Natural Heritage Resources (OPRD 2020).

The purpose of the Coburg Ridge Preserve, Cogswell-Foster Preserve, and Horse Rock Ridge Preserve as a few of TNC's natural areas is "to conserve the lands and waters on which all life depends" (OPRD 2020). Similarly, the purpose of the Greenbelt Land Trust-managed natural areas (i.e., Courtney Creek Preserve) is to "To protect in perpetuity native habitats, working lands, and lands of natural beauty, which provide a connection to the natural world for residents of the mid-Willamette Valley." While there are scenic areas included in the Oregon Natural Areas Plan, conserving scenic values within or around the aforementioned resources is not an identified purpose of these sites. As concluded in the Final Order on Request for Amendment 1 for Wheatridge Renewable Energy Facility East,[1] the Oregon Natural Areas Plan identifies areas with high-quality native ecosystems, rare plant and animal species, and unique geologic formations. The Plan includes areas that are designated in other plans as significant or important scenic resources but does not specifically address scenic resources itself. Based on the information available through the Oregon Natural Areas Plan, the Applicant concludes that the State of Oregon does not identify any significant or important scenic resources for inclusion in this Exhibit. However, the aforementioned resources are considered protected areas and potential visual impacts are evaluated in Exhibit E.

3.4 Tribal

There are no tribal lands located within the analysis area; therefore, this Exhibit does not address any tribal land management plans.

3.5 Regional

The METRO PLAN Eugene-Springfield Metropolitan Area General Plan serves as a long-range comprehensive play of metropolitan Lane County and the cities of Eugene and Springfield (City of Eugene et al. 2024). The Environmental Resources Element addresses the natural assets of the metropolitan area including scenic areas. Additionally, there are also scenic related goals related to the Willamette River and McKenzie River within the Willamette River Greenway, River Corridors,

[1] Final Order on Request for Contested Case and Request for Amendment 1 for the Wheatridge Renewable Energy Facility East, June 2024, p. 202

and Waterways Element; solely the Willamette River Greenway is within the analysis area (see Figure I-1; also evaluated as a protected area and recreation area in Exhibits E and K). Note that cities and counties are responsible for the implementation of Willamette River Greenway-associated land use management plans and compliance with Goal 15 (DLCD 2026). Therefore, based on the information provided through the METRO PLAN Eugene-Springfield Metropolitan Area General Plan, the Applicant concludes that the region identifies the Willamette River Greenway as a significant or important scenic resource for inclusion in this Exhibit.

3.6 Federal

3.6.1 Bureau of Land Management

The Northwestern and Coastal Oregon Record of Decision/Resource Management Plan (BLM 2016) manages visual/scenic resources on the federal lands under its jurisdiction through application of the Visual Resource Management (VRM) system (BLM 2026a). The BLM assigns VRM classifications to all BLM-administered lands; lands are placed within VRM Classes I, II, III, or IV depending on their existing visual quality and the management objectives relative to the amount of visual change that would be allowed to occur within those lands. The Applicant understands that the Oregon Department of Energy considers BLM-administered lands managed as VRM Class I and II to be important scenic resources, based on the level of visual resource protection afforded to those lands. Based on the assignment of the BLM-managed lands within the analysis area to VRM Class II (located east of and encompasses the Coburg Hills; BLM 2026b]), the Applicant concludes that there are VRM scenic resources within the analysis area (see Figure I-1).

Additionally, two Area of Critical Environmental Concern (ACEC) within the analysis area were identified as having valued views: the McGowan Meadow ACEC and Horse Rock Ridge ACEC/Research Natural Area (RNA) (BLM 2016; see Figure I-1; both evaluated as protected areas and/or recreation areas in Exhibits E and K). Therefore, based on the information provided through the Northwestern and Coastal Oregon Record of Decision/Resource Management Plan, the Applicant concludes that BLM identifies the VRM Class II Land, McGowan Meadow ACEC and Horse Rock Ridge ACEC/RNA as significant or important scenic resources for inclusion in this Exhibit.

3.6.2 National Park Service

The analysis area includes a portion of the California National Historic Trail (CNHT), which received federal designation as a "historic trail" under the National Trails System Act (NTSA) in 1978. The purpose of the historic trail designation on federal lands is to protect the historic route and any associated artifacts. Specifically, the purpose is described in Section 3(a)(3) of the NTSA as follows:

> *National historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment. Only those selected land and water based components of an historic trail which are on federally owned lands and which meet the national historic trail criteria established in this chapter are included as Federal protection components of a national historic trail….*(p. 209, NPS 1999)

Thus, the NTSA and its related protections apply only to where the CNHT is on federal lands. In addition, the focus of the NTSA is on historic preservation, not the management of scenic resources.

The NTSA indicates that specific locations along a historic trail can be identified as "high-potential" sites or trail segments. High-potential sites and trail segments are described as those locations that provide an opportunity to interpret the historic significance of the trail during its major use. As identified in the Comprehensive Management and Use Plan - Final Environmental Impact Statement (CMUP; NPS 1999), the portion of the CNHT within the analysis area does not include any high-potential sites or segments.

The CMUP was developed to comply with the requirements of the NSTA and to manage preservation of the CNHT. The CMUP explains that the purposes of the CNHT are "enable all people to envision and experience, in a coherent and convenient way, the heritage and impacts of the western overland migration" and " encourage preservation of its history and physical remains." Thus, the CNHT is managed for historical significance and not primarily as a scenic resource. The CMUP's focus on the historic significance of the CNHT and not management of scenic resources is consistent with the Oregon Energy Facility Siting Council findings in Section III.J of the Final Order on Request for Amendment 3 of the Leaning Juniper IIB Wind Power Facility Site Certificate, dated July 2025, which was related to the Oregon National Historic Trail but is applicable to the CNHT as well.[2] The scenic value connected with the CNHT is focused on the view of visible trail remnants and ruts, along with the immediate surroundings; scenic quality may be considered when the BLM/NPS is determining whether a site is a high-potential site, but that in itself does not designate the resource to have important or significant scenic qualities, descriptions, or management criteria. Therefore, the high-potential sites/segments of the CNHT identified in the CMUP are significant or important historic resources, but are not specifically identified as scenic resources (NPS 1999). Note that they are further evaluated in Exhibit J as important cultural resources.

Although the CNHT high-potential sites and segment are important historic resources, they are not considered nor managed as significant or important scenic resources.

4.0 Visual Impacts

4.1 Methodology – OAR 345-022-0080(5)(c)

(c) A description of the methodology the applicant used to identify and assess potential visual impacts to the scenic resources identified in subsection (a);

Visual impacts of the Facility are primarily related to views of the solar arrays, aboveground generation-tie transmission line, and, to a lesser degree (due to being collocated or dispersed amongst taller Facility infrastructure), other facilities such as the access roads, substation, BESS, aboveground collector lines (if deemed necessary), and temporary constructions staging areas.

[2] Final Order on Request for Amendment 3 of the Leaning Juniper IIB Wind Power Facility Site Certificate, July 2025, pp. 85-86.

4.1.1 Zone of Visual Influence Analysis

In evaluating the visual impacts, the Applicant first determined whether the Facility would potentially be visible from each scenic resource using digital bare-earth terrain modeling. A "bare-earth" modeling approach, based only on terrain and excluding existing structures and vegetation, results in a highly conservative assessment of potential visibility. The model does not account for distance, lighting, weather, and atmospheric attenuation factors that diminish visibility under actual field conditions. The analysis began with a zone of visual influence (ZVI) analysis (also known as a viewshed analysis), using Esri ArcGIS software, to identify the areas from which the Facility solar array and generation-tie transmission line might be visible.

To assess the potential visibility of the structures, the ZVI analysis was performed for the solar arrays and the generation-tie transmission line. The analysis assumed a maximum height of 10.1 feet for the solar arrays (Figure I-2). Additionally, a maximum height of 77 feet was assumed for the 230-kilovolt generation-tie transmission line (Figure I-3). A viewing height of 5.75 feet was assumed. Visibility of Facility infrastructure was defined by visible or not visible, indicated by color coding, and by proximity, i.e., foreground (less than 0.5 miles), middleground (0.5 to 5 miles), or background distances (more than 5 miles). The concept of distance zones can be used as a frame of reference to describe the characteristics of the visible landscape and the effects on scenery from human development and activities. Viewer distance and visual acuity are key factors in studying and determining visual effects, with perceived contrast and visual effects generally diminishing as distance between the viewer and the affected area increases. Distance zones (foreground, middleground, and background) provide a frame of reference for classifying the degree to which details of the viewed Facility would affect visual resources. The zones are defined by their distance from the Facility Site Boundary. These zones establish a reference for evaluating how project details influence visual resources. They are defined by their distance from the Facility as follows (BLM 1986):

- Foreground/Middleground. This distance zone (between 0 and 5 miles) is considered to be the range from which Facility component details would be visually clear (foreground) and where viewers still have the potential to distinguish individual forms, and texture and color are still identifiable, but become muted and less detailed (middleground).
- Background. Within this distance zone (between 5 miles and 15 miles), texture has disappeared, and color has flattened, making objects appear "washed out;" however, landform ridgelines are still distinguishable.
- Seldom Seen. This distance zone (beyond 15 miles) includes lands visible beyond the background distance or lands hidden from view from key locations.

Viewers are likely to perceive landscape features with greater clarity in foreground views, with clarity gradually diminishing toward the distant middleground. Within the background distance zone, forms, lines, and textures begin to blend into the surrounding landscape and colors generally appear more muted. Features located within the seldom-seen distance zone would be barely detectable.

The solar array components are described in further detail in the Background Information Exhibit. The solar panels would be the most visible components of the solar arrays and would consist of solar module strings, mounted on single-axis tracker systems. The visibility of the solar arrays would depend primarily on topographic or other view obstructions and the distance from the viewer to the solar arrays. With a maximum height of 10.1 feet, the arrays would not be visible from sites lower in elevation than the area on which the array is constructed. From sites that are similar in elevation to the arrays, viewers are likely to perceive only a line on the horizon, and not individual solar panels. Depending on the viewing distance, viewers at sites higher in elevation may have views of the panels, becoming more noticeable when the view direction is toward the angle at which the panel is tilted toward the sun. To the extent practicable, reflectivity of the solar arrays would be minimized. Antireflective coating would be used to reduce glare and the surface of the panels would have high transmittance to increase the amount of light reaching the photovoltaic cells. With these methods, the panels would be less reflective than a natural water body or a coated glass surface that is not antireflective.

4.1.2 Glare Analysis

A glare analysis was performed using the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT), a modeling/compliance analysis tool now licensed for public use within the ForgeSolar GlareGauge cloud software application. The SGHAT is considered to be an industry best practice for analysis of glare and glint related to solar energy generating facilities. It is a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare would occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare would occur throughout the year, with color indicating the potential ocular hazard. Note, however, that technology changes continue to occur to address issues such as reflectivity. The model, therefore, presents a conservative assessment based upon simplifying assumptions inherent in the model as well as industry improvements since the most recent update of such assumptions.

Based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to receptor, the GlareGauge categorizes potential glare where it is predicted by the model to occur in accordance with three tiers of severity (ocular hazards) that are shown by different colors in the model output:

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn);
- Yellow glare: glare predicted with a potential for temporary after-image; and
- Green glare: glare predicted with a low potential for temporary after-image.

These categories of glare are calculated using a typical observer's blink response time, ocular transmission coefficient (the amount of radiation absorbed in the eye prior to reaching the retina),

pupil diameter, and eye focal length (the distance between where rays intersect in the eye and the retina). As a point of comparison, direct viewing of the sun without a filter is considered to be on the border between yellow glare and red glare, while typical camera flashes are considered to be lower tier yellow glare (approximately three orders of magnitude less than direct viewing of the sun). Upon exposure to yellow glare, the observer may experience a temporary spot in their vision temporarily lasting after the exposure. Upon exposure to green glare, the observer may experience a bright reflection but typically no spot lasting after exposure.

The SGHAT was used to evaluate the potential for glint and glare when driving along 1) traveling along proximal segments Bowers Road, Coburg Road, Diamond Hill Road, Gap Road, Mt Tom Drive, Priceboro Drive, Albany-Jurisdiction City Hwy, Halsey-Sweet Home Hwy, and Interstate 5 (I-5); and 2) 40 nearby locations, designated as Observation Points (OPs) selected to represent observer views at nearby properties. The analysis reports are included as Attachment I-2.

The analyses reviewed seven PV array areas (PV arrays 1 to 7). The panels to be used at the Solar Components are smooth glass surface material with an anti-reflection coating, which is noted in the glare analysis. Two analyses were performed to simulate single axis tracking panels with a 52-degree tilt. The analyses were conducted for a panel height of 6.5 feet above ground surface (centroid/axis height) with applicable panel specifications. Backtracking was simulated with a resting angle of 5 degrees. Backtracking is the programmed strategy that rotates the modules away from the sun to reduce shading to other panels. This typically is put into effect when the sun's position lies outside the range of rotation defined by the maximum tracking angle (52 degrees) of the PV panels, or when substantial shading occurs. The resting angle is the programmed in tilt that the panels stay at while the sun's position is outside the defined tracking angle. The analysis includes calculations to predict potential glare minutes at the following specified receptors:

- Viewing height of observer in standard first-floor building at 6 feet above ground surface and standard vehicle at 3.5 feet above ground surface (Analysis 1);
- Viewing height of observer in standard second-floor building at 16 feet above ground surface and typical semi-tractor-trailer truck at 7.5 feet above ground surface (Analysis 2); and

The FAA Pre-Screening Tool allows the user to determine if a proposed structure would require a formal submission to the FAA under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace). This online tool was utilized to determine if the proposed Facility would require formal filing to the FAA. Based on the results of the FAA Notice Criteria Tool, the Facility does not exceed notice criteria; therefore, it is not required for the Facility to be formally filed with the FAA Obstruction Evaluation Group. With the Facility not needing to be filed with FAA and the nearest federally regulated airport located approximately 10 miles to the southwest (Eugene Airport - EUG), nearby flight paths and airports were not included in the analysis report.

The GlareGauge model does not account for varying ambient conditions (i.e., cloudy days, precipitation), atmospheric attenuation, screening due to existing vegetation or structures unless specified through obstruction modeling, and screening due to existing topography not located

within the defined array layout. The model assumes perfectly clear weather and no obstructions between the solar panels and the receptor unless modeled through the obstruction tool. In addition, proposed grading within the model PV array areas was not accounted for at this stage. A leveled topography within the defined PV array areas could result in less predicted glare.

4.2 Visual Impacts – OAR 345-022-0080(5)(d)(e)

(d) Identification of potential visual impacts to the scenic resources identified in subsection (a), including, but not limited to:

(A) Loss of vegetation or alteration of the landscape as a result of construction or operation;

(B) Visual impacts of facility structures or plumes, including but not limited to, changes in landscape character or quality; and

(C) Loss of visibility due to air emissions or other pollution resulting from the construction or operation of the proposed facility;

(e) An assessment of the significance of the visual impacts described under subsection (d);

Table I-2 presents the results of the viewshed analysis for nearby cities within the analysis area. The Facility would not generate any emissions plumes, so it would not cause any visual impacts from air emissions. Potential visual impacts due to dust created during construction would be largely prevented by following BMPs for dust control as detailed in Exhibit C and Exhibit O-2. Visual impacts of the Facility are primarily related to potential views of the solar array and generation-tie transmission line.

Table I-2. Viewshed Analysis Results for Cities Near the Facility

Jurisdiction	Assessment Results
Brownsville	No visibility
Coburg	Low potential visibility at a distance of over five miles
Eugene	Low potential visibility at a distance of over seven miles
Halsey	Low potential visibility at a distance of over eight miles
Harrisburg	Low potential visibility at a distance of over four miles
Junction City	Low potential visibility at a distance of over six miles

Descriptions of the visual effects of the Facility at the affected scenic resources are provided below. Note that some scenic resources are analyzed together due to colocation. The Coburg Ridge/Hills, McGowan Meadow ACEC, and Horse Rock Ridge ACEC/RNA would not have Facility visibility.

4.2.1 Coburg Ridge/Hills

Along the Coburg Ridge/Hills, no visual impacts from the Facility is anticipated. The viewshed analysis indicates no visibility of the solar arrays or generation-tie transmission line at the Coburg Ridge/Hills (Figures I-2 and I-3).

The Coburg Ridge/Hills is identified by the applicable local management plans as an important scenic resource where significant adverse visual impacts should be avoided (City of Coburg 2018, Lane County 2024a). The Coburg Hills overlap a portion of the Upper Willamette Valley Margin ACEC (analyzed as a protected area in Exhibit E), and the ACEC's primary purpose is for habitat conservation but offers some public access and recreational opportunities in proximity to various large waterbodies (e.g., Mckenzie River, Willamette River, Row Rivers, Cottage Grove/Dorena/Fall Creek Reservoirs), most of which are located outside of the analysis area (BLM 2016); the ACEC also has access to the Coburg Hills Back Country Byway and Shotgun Off-highway Vehicle Trail System (BLM 2026b). The ACEC is largely forested (unmanaged mature/late-successional) and thus is anticipated to have limited Facility visibility due to vegetation screening (BLM 2016, Google Earth 2024). The ACEC also has no specific scenic resources/viewpoints nor developed facilities/recreational opportunities beyond BLM roads identified within the analysis area (BLM 2016, Google Earth 2024). Similarly, Coburg Ridge is located within the Coburg Ridge Preserve (analyzed as a protected area in Exhibit E), which is privately owned (in coordination with The Nature Conservancy) and is preserved as a nature sanctuary featuring some of the largest examples of Willamette Valley native prairie and oak habitats (The Nature Conservancy 2026). However, due to the lack of Facility visibility, the Facility is not anticipated to compromise the purpose of the Coburg Ridge/Hills and would not result in any visual impacts on this scenic resource.

4.2.2 Willamette River Greenway/ Willamette Harrisburg Bridge

At the Willamette River Greenway/Willamette Harrisburg Bridge, the visual impact of the Facility is anticipated to be negligible; note that a majority of the Willamette River Greenway, in general, was found to not be visible from the Facility (in which the Willamette Harrisburg Bridge is located). The viewshed analysis indicates potential intermittent visibility of the solar arrays at a middleground distance of 4.5 miles or greater from scattered portions of the Greenway/Bridge (Figure I-2). Because the solar arrays would appear relatively low to the ground with a maximum height of 10.1 feet, they would be noticeable but not distinct from this distance and would not obstruct or intrude upon views from the resource. If they are visible, the arrays would appear as a dark line on the horizon and would create minimal visual contrast, which would be seen in context with existing landscape modifications, including existing utility infrastructure, and/or urban and industrial development. The Facility's associated generation-tie transmission line may also be visible at a background distance of 5.2 miles or greater from scattered portions of the Greenway, no visibility at the Bridge itself (Figure I-3). If visible, the generation-tie transmission line would introduce thin vertical structures that would create minimal visual contrast in context with other existing similar electrical infrastructure in the viewshed. The Facility would not introduce a new or unusual feature

to the view or significantly alter the existing visual character. No significant amounts of glare are predicted for this resource (see Section 4.3 for further discussion).

The Willamette River Greenway and Willamette Harrisburg Bridge are identified by the applicable regional management plans as well as by local plans as important scenic resources where significant adverse visual impacts should be avoided (City of Eugene 2025, City of Harrisburg 2013, City of Eugene et al. 2024, Lane County 2024a, Linn County 2025a). Numerous recreation opportunities are available along the Greenway/near the Bridge, from various water recreation opportunities associated with the Willamette River, to hunting and camping opportunities (ODFW 2026, OPRD 2026). The Willamette River Greenway is anticipated to be largely screened by topography, vegetation, and human-made structures (Google Earth 2024). Therefore, although the Greenway and Bridge would have some intermittent Facility visibility, the Facility is not anticipated to compromise the purpose of the Greenway/Bridge and would not result in significant adverse visual impacts on this scenic resource.

4.2.3 Muddy Creek

Along Muddy Creek, the visual impact of the Facility is anticipated to be low. The viewshed analysis indicates potential visibility of the solar arrays at a foreground distance of 0.4 miles or greater along most portions of the Creek within the analysis area (Figure I-2). Because the solar arrays would appear relatively low to the ground with a maximum height of 10.1 feet, they would not be a prominent feature from this distance and would not obstruct or intrude upon views from the resource. If they are visible, the arrays would appear as a dark line on the horizon or a thin band and would create weak visual contrast, which would be seen in context with existing landscape modifications, including existing utility infrastructure, and/or urban and industrial development. The Facility's associated generation-tie transmission line may also be visible at a middleground distance of 1.2 miles or greater from most portions of the Creek within the analysis area (Figure I-3). If visible, the generation-tie transmission line would introduce thin vertical structures that would create minimal visual contrast in context with other existing similar electrical infrastructure in the viewshed. The Facility would not introduce a new or unusual feature to the view or significantly alter the existing visual character. No significant amounts of glare are predicted for this resource (see Section 4.3 for further discussion).

Muddy Creek is identified by the applicable local plans as an important scenic resource where significant adverse visual impacts should be avoided (City of Harrisburg 2013). Besides scenic preservation, the Creek is also managed for riparian vegetation and wildlife habitat and is publicly accessible solely through Greenbelt Land Trust-led tours and events (City of Harrisburg 2013, Greenbelt Land Trust 2026). As mentioned previously, existing views from the Creek within the analysis area include urban/industrial development and various human-made structures including electrical and utility infrastructure (Google Earth 2024). Therefore, although the Creek would have some Facility visibility, the Facility is not anticipated to compromise the purpose of the Creek. With the implementation of management measures as applicable (see Section 5.0), the Facility would not have a significant adverse visual impact on this scenic resource.

4.2.4 Over the Rivers and Through The Woods Scenic Byway

Along the Over the River and Through the Woods Scenic Byway, the visual impact of the Facility is anticipated to be negligible. The viewshed analysis indicates no visibility of the solar arrays at the Byway within the analysis area (Figure I-2). However, the Facility's associated generation-tie transmission line may be visible at a background distance of 9.8 miles or greater from a small portion of the Byway close to I-5 (Figure I-3). If visible, the generation-tie transmission line would introduce thin vertical structures that would create minimal visual contrast in context with other existing similar electrical infrastructure as well as urban/industrial development in the viewshed. The Facility would not introduce a new or unusual feature to the view or significantly alter the existing visual character. No significant amounts of glare are predicted for this resource (see Section 4.3 for further discussion). Visual impacts from the Facility infrastructure would be transient in nature, experienced by drivers as they pass near the Facility area.

There is no management direction for preservation of views or scenic quality related to the lands on which the Facility is located, outside the boundaries of the Byway. The Byway is identified by the applicable state management plans as an important scenic resource where significant adverse visual impacts should be avoided (ODOT 2023). Recreational opportunities include sightseeing; the portion of the Byway within the analysis starts directly adjacent to I-5 traveling east through the towns of Brownsville and Crawfordsville, Oregon, where expansive agricultural land and rural development are visible, with no associated viewpoints or facilities (Travel Oregon 2025). However, due to the limited Facility visibility and distant proximity, the Facility is not anticipated to compromise the purpose of the Byway and would not result in significant adverse visual impacts on this scenic resource.

4.2.5 McGowan Meadow ACEC

At the McGowan Meadow ACEC, no visual impacts from the Facility is anticipated**.** The viewshed analysis indicates no visibility of the solar arrays or generation-tie transmission line at the ACEC (Figures I-2 and I-3).

The McGowan Meadow ACEC is identified by the applicable federal management plans as an important scenic resource where significant adverse visual impacts should be avoided (BLM 2016). The ACEC is managed for habitat conservation but allows some public access, includes the Coburg Hiking Trail System, McGowen Creek Environmental Education Trail, and is a proposed Celebrating Wildflower Site (Beorchia et al. 2025, BLM 2016, BLM 2026b). However, due to the lack of Facility visibility, the Facility is not anticipated to compromise the purpose of the ACEC and would not result in any visual impacts on this scenic resource.

4.2.6 Horse Rock Ridge RNA/ACEC

At the Horse Rock Ridge RNA/ACEC, no visual impacts from the Facility is anticipated. The viewshed analysis indicates no visibility of the solar arrays or generation-tie transmission line at the RNA/ACEC (Figures I-2 and I-3).

The Horse Rock Ridge RNA/ACEC is identified by the applicable federal management plans as an important scenic resource where significant adverse visual impacts should be avoided (BLM 2016). The RNA/ACEC is primarily managed for habitat conservation but otherwise offers hiking within an expansive grassy area with views of the Cascade Mountains (BLM 2016). However, due to the lack of Facility visibility, the Facility is not anticipated to compromise the purpose of the RNA/ACEC and would not result in any visual impacts on this scenic resource.

4.2.7 Visual Resource Management Class II Lands

At the VRM Class II Land, the visual impact of the Facility is anticipated to be negligible. The viewshed analysis indicates potential visibility of the solar arrays at a middlground distance of 3.0 miles or greater within limited portions of the Class II Lands in the analysis area (Figure I-2). Because the solar arrays would appear relatively low to the ground with a maximum height of 10.1 feet, they would be noticeable but not distinct from this distance and would not obstruct or intrude upon views from the resource. If they are visible, the arrays would appear as a dark line on the horizon and would create minimal visual contrast, which would be seen in context with existing landscape modifications, including existing utility infrastructure, and/or urban and industrial development. The Facility's associated generation-tie transmission line may also be visible at a middleground distance of 4.9 miles or greater from limited portions of the Class II Lands (Figure I-3). If visible, the generation-tie transmission line would introduce thin vertical structures that would create minimal visual contrast in context with other existing similar electrical infrastructure in the viewshed. The Facility would not introduce a new or unusual feature to the view or significantly alter the existing visual character. No significant amounts of glare are predicted for this resource (see Section 4.3 for further discussion).

The VRM Class II Land is identified by the applicable federal management plans as an important scenic resource where significant adverse visual impacts should be avoided (BLM 2016). The VRM Class II Land within the analysis area (and coincidentally, the only portion of the VRM Class II Land that has Facility visibility) overlaps with the Coburg Hills (as discussed above in Section 4.2.1) and the Upper Willamette Valley Margin ACEC (analyzed as a protected area in Exhibit E). The ACEC's primary purpose is for habitat conservation but offers some public access and recreational opportunities in proximity to various large waterbodies (e.g., Mckenzie River, Willamette River, Row Rivers, Cottage Grove/Dorena/Fall Creek Reservoirs), most of which are located outside of the analysis area (BLM 2016); the ACEC also has access to the Coburg Hills Back Country Byway and Shotgun Off-highway Vehicle Trail System (BLM 2026b). The ACEC is largely forested (unmanaged mature/late-successional) and thus is anticipated to have limited Facility visibility due to vegetation screening (BLM 2016, Google Earth 2024). The ACEC also has no specific scenic resources/viewpoints nor developed facilities/recreational opportunities beyond BLM roads identified within the analysis area (BLM 2016, Google Earth 2024). Therefore, although the Class II Lands would have limited Facility visibility, the Facility is not anticipated to compromise the purpose of the Class II Lands and would not result in significant adverse visual impacts on this scenic resource.

4.3 Glare Analysis Results

4.3.1 Analysis 1 – 1st-Story Receptors

Analysis 1 analyzed seven PV Array Areas for 40 first-story receptors (OP-1 through OP-40) and nine proximal route receptors along segments of Bowers Road, Coburg Road, Diamond Hill Road, Gap Road, Mt Tom Drive, Priceboro Drive, Albany-Jurisdiction City Hwy, Halsey-Sweet Home Hwy, and I-5 from the height of a standard commuter vehicle. The SGHAT GlareGauge modeled the results for the Facility (Attachment I-2). The simulation predicted that no glare would occur to the modeled receptors.

4.3.2 Analysis 2 – 2nd-Story Receptors

Analysis 2 analyzed seven PV Array Areas for 40 second-story receptors and nine proximal route receptors along segments of Bowers Road, Coburg Road, Diamond Hill Road, Gap Road, Mt Tom Drive, Priceboro Drive, Albany-Jurisdiction City Hwy, Halsey-Sweet Home Hwy, and I-5 from the height of a typical tractor trailer. The SGHAT GlareGauge modeled the results for the Facility (Attachment I-2). The simulation predicted that no glare would occur to the modeled receptors.

4.3.3 Summary of Glare Analysis Results

The Facility layout was modeled on SGHAT GlareGauge in order to evaluate the potential extent of any glint and glare the proposed Facility may have upon nearby points of observation and vehicle routes. Two analyses were performed: the analyses represented a single axis tracking system with 52˚ tilt and panel specifications of smooth glass with ARC. The analyses showed that no glare is predicted to the surrounding area based on the receptors used (Attachment I-2).

5.0 Avoidance and Mitigation Measures – OAR 345-022-0080(5)(f)

> *(f) A description of the measures the applicant proposes to avoid, reduce or otherwise mitigate any potential significant adverse visual impacts; and*

This section discusses anticipated Facility design, engineering, and related measures to avoid, reduce, or otherwise mitigate adverse visual impacts from the Facility as described above.

5.1 Project Planning and Design Measures

To avoid and minimize visual impacts, the Applicant has sited the Facility in a moderately developed area of Linn County (e.g., adjacent to a major transportation corridor, rest area, utility infrastructure) and designed the solar array such that visibility would be minimal from the nearest towns or, worst case, not create visual contrast due to the existing landscape modifications. The solar arrays would be installed with a racking system that enables the photovoltaics to track the

sun through the day. As such, the arrays would only be at their maximum angle (i.e., tallest position) for a brief portion of the day following sunrise, and a brief portion of the day prior to sunset. The solar arrays would be at a lower angle during the remaining hours of the day and night, including horizontal, which is the default and nighttime position. Similarly, the substation and BESS would be designed/painted to be generally consistent with the surrounding landscape. The generation-tie transmission line would be routed internally amongst other Facility infrastructure and adjacent to the point of interconnection/substation to minimize visual impacts. Support towers for the generation-tie transmission line would be either steel or wood—which would largely blend with the surroundings—or steel, which would have a low-reflectivity coating. Electrical collector lines would be placed underground as practicable. Lighting on the Facility would be minimal. Lighting on the Facility would be minimal. Outdoor lighting at the Facility substation and BESS would be kept to a minimum through the use of motion sensors and switches to reduce lighting to the minimum required for safety when not in use, and lighting would be directed downward and inward to prevent off-site glare.

Additional mitigation measures may include refinements to Facility siting during final design, particularly the routing of access roads to reduce environmental and visual impacts.

5.2 Landscape Treatment Measures

Landscape treatment measures that are considered to reduce the potential visual impacts of the solar array and generation-tie transmission line typically involve construction or post-construction actions that can help to screen facilities from view or soften their appearance. These measures can include vegetation clearing practices used in construction, landscape plantings in specific locations following construction, and practices used in long-term operation and maintenance of the solar facilities.

The Applicant would consider landscaping or vegetation management measures that have been identified as a potential means to reduce visual impacts from the Facility, as outlined below. Similar to design measures, some landscape treatment measures may be specific to a visual concern for a certain portion of the Facility, while others would be applied on a Facility-wide basis. Landscape treatment measures that have been suggested and would be incorporated into the Facility are summarized as follows:

- The Applicant would develop a Revegetation Plan (see Exhibit G) that includes measures for rehabilitation of impacts related to vegetation clearing. Among other provisions in the plan, vegetation clearing and ground disturbance would be limited to the area necessary to safely and efficiently install the Facility infrastructure.
- Survey crews would remove all stakes and flagging from the construction area following construction.
- Access roads and other areas of ground disturbance would be watered during construction, as needed, to avoid the generation of airborne dust.

- Vegetation screening would be considered on a case-by-case basis where it would be practical and effective in reducing the visibility of Facility infrastructure.
- Prior to facility retirement, minimum restoration activities would take place including dismantling of facility infrastructure and revegetation of disturbed areas.

6.0 Monitoring – OAR 345-022-0080(5)(g)

(g) The applicant's proposed monitoring program, if any, for impacts to scenic resources.

Monitoring for visual impacts is not proposed. Unlike some other types of impacts, such as potential impacts to biological resources, visual impacts typically do not change over time. Therefore, monitoring for visual impact would not provide meaningful information.

7.0 References

Beorchia R. and A. Esterson. 2025. McGowan Meadow Restoration 2024 Annual Report. Institute for Applies Ecology. February 2025. https://appliedeco.org/wp-content/uploads/McGowan-Meadow-2024-Annual-Report.pdf.

BLM (U.S. Bureau of Land Management). 1986. Manual H-8410-1 – Visual Resource Inventory. https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_H-8410.pdf.

BLM. 2016. Northwestern and Coastal Oregon Record of Decision and Approved Resource Management Plan, Coos Bay, Eugene, Salem Districts, and Swiftwater Field Office of Roseburg District. August 2016. https://eplanning.blm.gov/public_projects/lup/57902/79046/91311/NCO_ROD_RMP_ePlanning.pdf.

BLM. 2026a. Visual Resource Management. Accessed May 2026. https://www.blm.gov/programs/recreation/recreation-programs/visual-resource-management.

BLM. 2026b. BLM National Data. Accessed May 2026. https://experience.arcgis.com/experience/9a89ee80c604431e8f8d939a186fbdbb#widget_6=layer_visibility:%7B%22widget_6-dataSource_2%22%3A%7B%22widget_6-dataSource_2-BLM_Natl_VRI_Inventories_2045%22%3Atrue%7D%7D,active_datasource_id:dataSource_2,center:-12990797.593022615%2C5655049.022547009%2C102100,scale:5750911.168189914,rotation:0,viewpoint:%7B%22rotation%22%3A0%2C%22scale%22%3A5750911.168189914%2C%22targetGeometry%22%3A%7B%22spatialReference%22%3A%7B%22latestWkid%22%3A3857%2C%22wkid%22%3A102100%7D%2C%22x%22%3A-12990797.593022615%2C%22y%22%3A5655049.022547009%7D%7D.

City of Brownsville. 1980. Brownsville Comprehensive Plan. https://www.ci.brownsville.or.us/planning#occdrw.

City of Coburg. 2018. City of Coburg Comprehensive Plan. Adopted September 20, 2005, amended May 8, 2018. https://www.coburgoregon.gov/media/6951.

City of Coburg. 2025. Coburg Zoning Code. November 12, 2025. https://www.coburgoregon.gov/media/8946.

City of Eugene. 2023. Envision Eugene Comprehensive Plan. July 2017 updated through August 2023. https://www.eugene-or.gov/DocumentCenter/View/71354/Envision-Eugene-Comp-Plan---August-2023.

City of Eugene. 2025. Land Use Code. November 2025. https://eugene.municipal.codes/EC/2.

City of Eugene, City of Springfield, and Lane County. 2024. METRO PLAN Eugene-Springfield Metropolitan Area General Plan. July 1, 2024. https://www.lcog-or.gov/media/32141.

City of Halsey. 1990. Comprehensive Plan for the City of Halsey. June 1990. https://cms2.revize.com/revize/halseyor/Document%20Center/Government/Boards%20&%20Committees/Planning%20Commission/Comprehensive-Plan.pdf?t=202211301129300&t=202211301129300.

City of Halsey. 2025. Halsey Municipal Code. June 10, 2025. https://www.codepublishing.com/OR/Halsey/.

City of Harrisburg. 2013. Comprehensive Plan. https://www.ci.harrisburg.or.us/documents.

City of Junction City. 2016 Junction City, 2013 Comprehensive Plan. Amended 2016. https://www.junctioncityoregon.gov/index.asp?SEC=5F620604-8FE9-4A2C-82F9-15698044DFB0&DE=AF8E7F0F-F7A8-4E11-BF52-508205C36844.

City of Junction City. 2025. Junction City Municipal Code. December 9, 2025. https://www.codepublishing.com/OR/JunctionCity/.

DLCD (Department of Land Conservation and Development). 2026. Goal 15: Willamette River Greenway. Accessed May 2026. https://www.oregon.gov/lcd/op/pages/goal-15.aspx.

Google Earth. 2024. Imagery Date: 6/19/2024.

Greenbelt Land Trust. 2026. Muddy Creek. Accessed May 2026. https://greenbeltlandtrust.org/conserving-land/muddy-creek/.

Lane County. 2024a. Lane County Rural Comprehensive Plan. General Plan Policies 1984. https://www.lanecountyor.gov/common/pages/GetFile.ashx?key=JtZiALsp.

Lane County. 2024b. Lane Code. 2024. https://www.lanecountyor.gov/government/county_departments/county_counsel/lane_code.

Linn County. 2025a. Title 9: Subtitle 1 – Comprehensive Plan. 2025. https://www.linncountyor.gov/attorney/page/volume-2-title-9.

Linn County 2025b. Title 9: Subtitle 2 – Land Development Code. 2025. https://www.linncountyor.gov/attorney/page/title-9-subtitle-2-land-development-code.

NPS (National Park Service). 1999. Comprehensive Management and Use Plan, Final Environmental Impact Statement. California National Historic Trail, Pony Express National Historic Trail. https://www.nps.gov/cali/learn/management/upload/Comprehensive_Management_Plan-508.pdf.

ODFW (Oregon Department of Fish and Wildlife). 2026. Oregon Hunting Access Map. https://myodfw.com/articles/hunting-access-map.

ODOE (Oregon Department of Energy). 2025. First Amended Project Order for Muddy Creek Energy Park. June 10, 2025. https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2025-06-10-MCEPNOI-First-Amended-Project-Order.pdf.

ODOT (Oregon Department of Transportation). 2023. 1999 Oregon Highway Plan. Including amendments November 1999 through January 2023. https://www.oregon.gov/odot/Planning/Documents/OHP.pdf.

ODOT. 2026. Scenic Byways Program. Accessed May 2026. https://www.oregon.gov/odot/programs/pages/scenic-byways.aspx.

OPRD (Oregon Parks and Recreation Department). 2020. Draft Oregon Natural Areas Plan. https://inr.oregonstate.edu/sites/inr.oregonstate.edu/files/2020_nap_draft.pdf.

OPRD. 2026. Willamette River Greenway and Water Trail. https://stateparks.oregon.gov/index.cfm?do=park.profile&parkId=194.

The Nature Conservancy. 2026. Coburg Ridge Preserve. Accessed May 2026. https://www.nature.org/en-us/get-involved/how-to-help/places-we-protect/coburg-ridge/.

Travel Oregon. 2025. Over the Rivers and Through The Woods Scenic Byway. March 27, 2025. https://traveloregon.com/things-to-do/trip-ideas/scenic-drives/over-the-river-and-through-the-woods/.

8.0 Approval Standards and Submittal Requirements

Table I-3. Approval Standards and Submittal Requirements

Requirements	Location
OAR 345-022-0080 Scenic Resources	
Approval Standards	
(1) To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse visual impacts to significant or important scenic resources.	Sections 3.0 through 6.0
(2) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). In issuing such a site certificate, the Council may impose conditions of approval to minimize the potential significant adverse visual impacts from the design, construction, and operation of the facility on significant or important scenic resources.	N/A
(3) A scenic resource is considered to be significant or important if it is identified as significant or important in a current land use management plan adopted by one or more local, tribal, state, regional, or federal government or agency.	Section 3.0
(4) The Council shall apply the version of this rule adopted under Administrative Order EFSC 1-2007, filed and effective May 15, 2007, to the review of any Application for Site Certificate or Request for Amendment that was determined to be complete under OAR 345-015-0190 or 345-027-0363 before the effective date of this rule. Nothing in this section waives the obligations of the certificate holder and Council to abide by local ordinances, state law, and other rules of the Council for the construction and operation of energy facilities in effect on the date the site certificate or amended site certificate is executed.	N/A
Submittal Requirements	
(5) To assist the Council in determining whether the standard outlined in (1) through (4) has been met, the Applicant must submit an analysis of potential visual impacts of the proposed facility, if any, on significant or important scenic resources within the analysis area, providing evidence to support a finding by the Council under OAR 345-022-0080, including:	–
(a) An inventory of scenic resources identified as significant or important in a land use management plan adopted by one or more local, tribal, state, regional, or federal government or agency applicable to lands within the analysis area for scenic resources. The applicant must provide a list of the land management plans reviewed in developing the inventory and a copy of the relevant portion of the plans;	Attachment I-1, Section 3.0
(b) A map or maps showing the location of the scenic resources described under subsection (a), in relation to the site of the proposed facility;	Figure I-1
(c) A description of the methodology the applicant used to identify and assess potential visual impacts to the scenic resources identified in subsection (a);	Section 4.1
(d) Identification of potential visual impacts to the scenic resources identified in subsection (a), including, but not limited to:	–
(A) Loss of vegetation or alteration of the landscape as a result of construction or operation;	Section 4.2, Figures I-2 and I-3

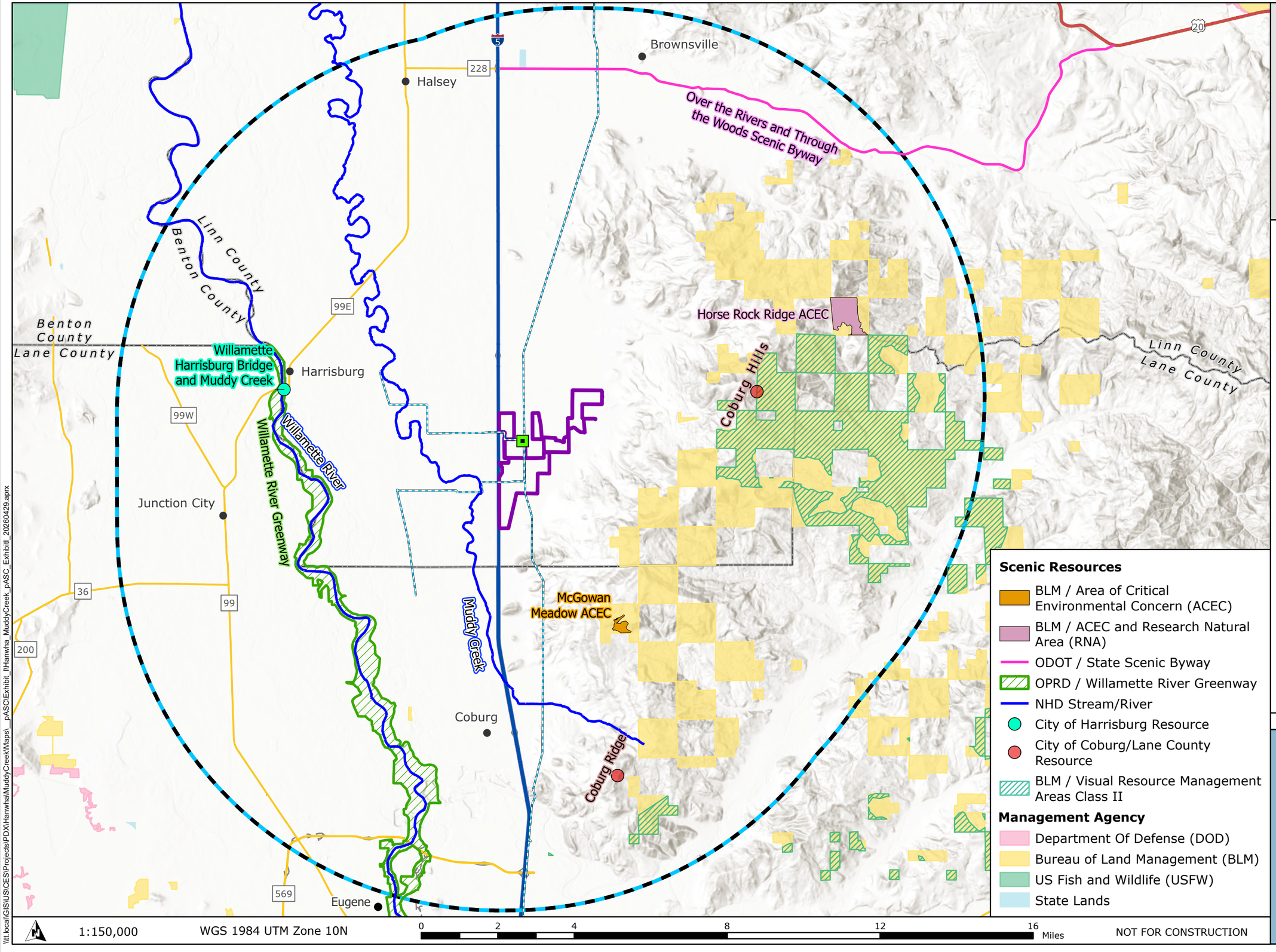
Requirements	Location
(B) Visual impacts of facility structures or plumes, including but not limited to, changes in landscape character or quality; and	Sections 4.2 and 4.3, Figures I-2 and I-3, Attachment I-2
(C) Loss of visibility due to air emissions or other pollution resulting from the construction or operation of the proposed facility;	Section 4.2, Figures I-2 and I-3
(e) An assessment of the significance of the visual impacts described under subsection (d);	Sections 4.2 and 4.3, Figures I-2 and I-3, Attachment I-2
(f) A description of the measures the applicant proposes to avoid, reduce or otherwise mitigate any potential significant adverse visual impacts; and	Section 5.0
(g) The applicant's proposed monitoring program, if any, for impacts to scenic resources.	Section 6.0

Figures

Muddy Creek Energy Park

Figure I-1
Scenic Resources within the Analysis Area

LINN COUNTY, OR



Scenic Resources

- BLM / Area of Critical Environmental Concern (ACEC)
- BLM / ACEC and Research Natural Area (RNA)
- ODOT / State Scenic Byway
- OPRD / Willamette River Greenway
- NHD Stream/River
- City of Harrisburg Resource
- City of Coburg/Lane County Resource
- BLM / Visual Resource Management Areas Class II

Management Agency

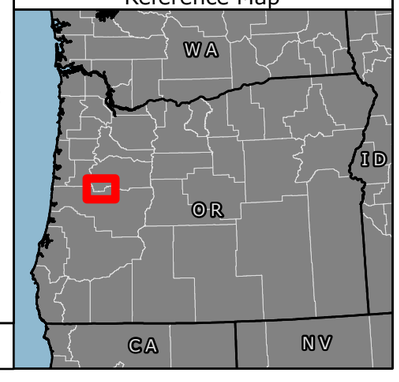
- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- US Fish and Wildlife (USFW)
- State Lands

- Facility Site Boundary
- Analysis Area (10-mile Buffer)
- City/Town
- County Boundary
- Interstate Highway
- US Highway
- State Highway
- Existing Transmission Line
- Existing Substation

TETRA TECH

Hanwha Renewables

Reference Map



1:150,000 WGS 1984 UTM Zone 10N

0 2 4 8 12 16 Miles

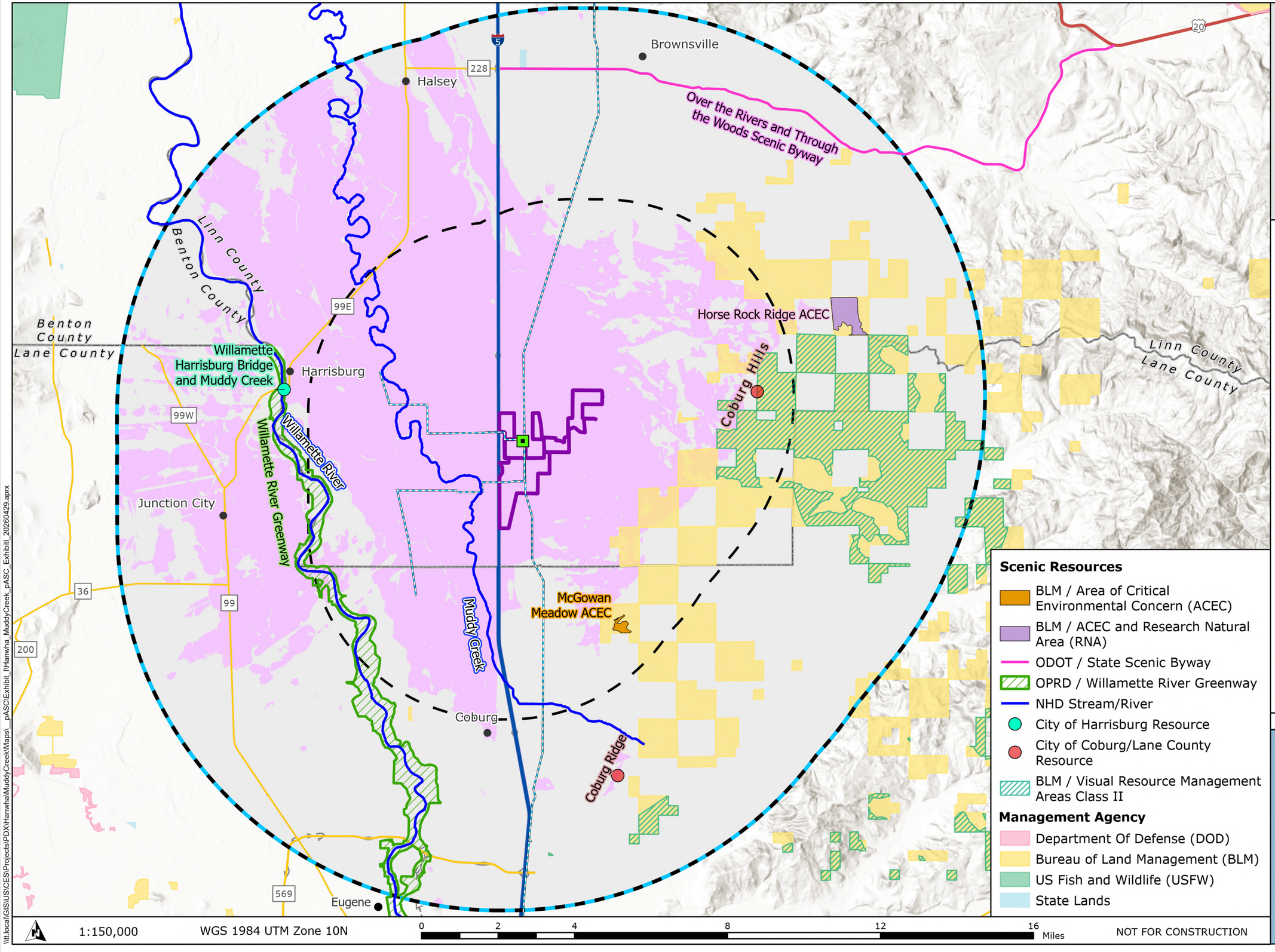
NOT FOR CONSTRUCTION

\\ttlocal\GIS\US\CES\Projects\PDX\HanwhaMuddyCreek\Maps__pASC\Exhibit_IHanwha_MuddyCreek_pASC_Exhibit_20260429.aprx

Muddy Creek Energy Park

Figure I-2
Scenic Resources Viewshed

LINN COUNTY, OR



- Facility Site Boundary
- Analysis Area (10-mile Buffer)
- 5-miles
- City/Town
- County Boundary
- Interstate Highway
- US Highway
- State Highway
- Existing Transmission Line
- Existing Substation

Viewshed Results*

- Solar Array Potentially Not Visible
- Solar Array Potentially Visible

Scenic Resources

- BLM / Area of Critical Environmental Concern (ACEC)
- BLM / ACEC and Research Natural Area (RNA)
- ODOT / State Scenic Byway
- OPRD / Willamette River Greenway
- NHD Stream/River
- City of Harrisburg Resource
- City of Coburg/Lane County Resource
- BLM / Visual Resource Management Areas Class II

Management Agency

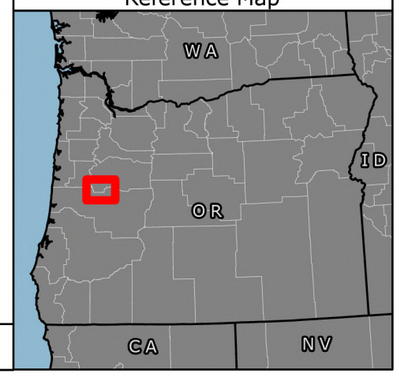
- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- US Fish and Wildlife (USFW)
- State Lands

*Solar array visibility calculated using a 10 meter bare-earth digital elevation model with fence/array heights of 10.10 feet (3.08 meters) and a viewing height of 5.75 feet (1.75 meters).

TETRA TECH

Hanwha Renewables

Reference Map



\\tt.local\GIS\US\CES\Projects\PDX\HanwhaMuddyCreek\Maps__pASC\Exhibit_I\Hanwha_MuddyCreek_pASC_ExhibitI_20260429.aprx

Muddy Creek Energy Park

Figure I-3
Scenic Resources Viewshed

LINN COUNTY, OR

Brownsville
Halsey
228
5
20
Over the Rivers and Through the Woods Scenic Byway
Linn County
Benton County
99E
Benton County
Lane County
Willamette Harrisburg Bridge and Muddy Creek
Harrisburg
Horse Rock Ridge ACEC
Coburg Hills
Linn County
Lane County
99W
Willamette River Greenway
Willamette River
Junction City
36
99
200
Muddy Creek
McGowan Meadow ACEC
Coburg
Coburg Ridge
569
Eugene

Scenic Resources

- BLM / Area of Critical Environmental Concern (ACEC)
- BLM / ACEC and Research Natural Area (RNA)
- ODOT / State Scenic Byway
- OPRD / Willamette River Greenway
- NHD Stream/River
- City of Harrisburg Resource
- City of Coburg/Lane County Resource
- BLM / Visual Resource Management Areas Class II

Management Agency

- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- US Fish and Wildlife (USFW)
- State Lands

- Facility Site Boundary
- Analysis Area (10-mile Buffer)
- 5-miles
- City/Town
- County Boundary
- Interstate Highway
- US Highway
- State Highway
- Existing Transmission Line
- Existing Substation

Viewshed Results*

- Gen-Tie Potentially Not Visible
- Gen-Tie Potentially Visible

*Potential Gen-Tie Line visibility calculated using a 10 meter bare-earth digital elevation model with collector line heights of 77 feet (23.47 meters) and a viewing height of 5.75 feet (1.75 meters).

TETRA TECH
Hanwha Renewables

Reference Map



1:150,000
WGS 1984 UTM Zone 10N
0 2 4 8 12 16 Miles
NOT FOR CONSTRUCTION

\\tt.local\GIS\US\CES\Projects\PDX\HanwhaMuddyCreek\Maps_pASC\Exhibit_I\Hanwha_MuddyCreek_pASC_ExhibitI_20260429.aprx

Attachment I-1. Land Use Management Plan Excerpts

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources

LCDC Goal: "To conserve open space and protect natural and scenic resources."

Coburg Objective: To protect, restore and enhance open space, scenic and historic areas, and, to promote a healthy and visually attractive environment in harmony with the natural landscape.

Open Spaces

Policy 1: The City shall maintain and enhance parks and open spaces in the community.

Policy 2: Open space in the form of city parks shall be retained through application of provisions of the Zoning Ordinance.

Policy 3: Open space and landscaped areas such as parks and school grounds shall be connected where possible by a pedestrian/bicycle pathway system.

Policy 4: The City shall encourage the protection of the Oak Forest in the Coburg Hills and the Oak Savannah habitat east of the city.

Policy 5: The City shall maintain an open space separation between the city limits of Coburg and Eugene.

Scenic Resources

Policy 6: The city will seek intergovernmental agreements with Lane County and other jurisdictions to preserve the Coburg Hills as a scenic resource.

Policy 7: Important public vistas and views of the Coburg Hills, agrarian landscape and other significant visual features will continue to be preserved through careful design of building height, density, transition, building placement, street layout and other design elements.

Historic Areas

Policy 9: The City shall encourage the continuation of the Coburg Heritage Committee in its efforts to provide research information to the City for conservation, preservation and rehabilitation of significant sites and structures as indicated in the Coburg Historic Resources Survey.

Policy 10: The City shall establish conditional use and site review criteria governing the alteration and demolition of sites and structures that

Willamette River Greenway Permits

9.8800 Purpose of Willamette River Greenway Permits.

The purpose of Willamette River Greenway Permits is to implement Oregon Statewide Planning Goal 15, Willamette River Greenway, which is designed to protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic, and recreational qualities of lands along the Willamette River. Protection, conservation, enhancement, and maintenance of the qualities of lands within the Willamette River Greenway is achieved through the following measures:

(1) Review of intensification of uses, changes in use, and developments proposed within the boundaries of the Willamette River Greenway.

(2) Imposition of conditions of approval as necessary to carry out the purpose and intent of the Willamette River Greenway

(Section 9.8800, see chart at front of Chapter 9 for legislative history from 2/26/01 through 6/1/02; Ordinance No. 20693, enacted July 12, 2023, effective August 18, 2023.)

9.8805 Willamette River Greenway Permits – Applicability.

Willamette River Greenway permit applications are required for intensification of uses, changes in use, or developments within the boundaries of the Willamette River Greenway established by Resolution No. 2592 Adopting a Willamette River Greenway Boundary.

(Section 9.8805, see chart at front of Chapter 9 for legislative history from 2/26/01 through 6/1/02; Ordinance No. 20693, enacted July 12, 2023, effective August 18, 2023.)

9.8810 Willamette River Greenway Permits - Application Requirements.

(1) Willamette River Greenway Permit applications shall be considered in accordance with the Type III application procedures contained in EC 9.7300 through EC 9.7340 Application Procedures unless considered concurrently with a Type IV or Type V application.

(2) If the intensification of use, change in use, or development that triggers the requirement for a Willamette River Greenway Permit includes or proposes housing, the written statement submitted with the Willamette River Greenway Permit application shall clearly state whether the applicant is electing to proceed under the Clear and Objective approval criteria in EC 9.8812, or whether the applicant is electing to proceed under the General approval criteria in EC 9.8815.

(3) No development permit shall be issued by the city when a Willamette River Greenway Permit is required for a proposed development until the Willamette River Greenway Permit has been approved and becomes effective. Development permits shall be consistent with the terms and conditions of that Willamette River Greenway Permit.

(Section 9.8810, see chart at front of Chapter 9 for legislative history from 2/26/01 through 6/1/02; amended by Ordinance No. 20513, enacted July 8, 2013, effective August 9, 2013; Ordinance No. 20569, enacted November 14, 2016, effective December 17, 2016; Ordinance No. 20667, enacted May 24, 2022, effective June 25, 2022, remanded on October 12, 2023, and provisions administratively removed ; Ordinance No. 20693, enacted July 12, 2023, effective August 18, 2023.)

9.8811 Willamette River Greenway Setback – Clear and Objective.

(1) The Willamette River Greenway Setback is established to protect, maintain, preserve, and enhance the natural, scenic, historic, and recreational qualities of the Willamette River Greenway.

(2) The Willamette River Greenway Setback is only applicable to a Willamette River Greenway Permit Application when the applicant elects to proceed under the Clear and Objective approval criteria in EC 9.8812.

(3) The location of the Willamette River Greenway Setback is established by the Willamette River Greenway Setback Map adopted as Exhibit A-1 to Ordinance No. 20693.

(4) No structures, other than the structures listed in subsection (5) of this section may be built within the Willamette River Greenway Setback.

(5) For purposes of review under the Clear and Objective Willamette River Greenway Permit approval criteria in EC 9.8812, the City has determined that pedestrian paths and/or public accessways that are proposed or otherwise required pursuant to EC 9.8812(4) are the only structures within the Willamette River Greenway Setback necessary to support water-related and/or water-dependent uses; therefore, pedestrian paths and/or public accessways that are proposed or otherwise required pursuant to EC 9.8812(4) are the only new structures that may be constructed within the Willamette River Greenway Setback pursuant to a Willamette River Greenway Permit approved under EC 9.8812.

(Added by Ordinance No. 20693, enacted July 12, 2023, effective August 18, 2023.)

9.8812 Willamette River Greenway Permit Approval Criteria – Clear and Objective.

Unless an applicant proposing an intensification of use, change in use, or development that proposes or includes housing elects to use the General Willamette River Greenway Permit approval criteria in EC 9.8815, approval, approval with conditions, or denial of a Willamette River Greenway Permit that proposes or includes housing shall be based solely on compliance with the following approval criteria:

accessway to existing public ways that provide a connection to or along the Willamette River. The public accessway shall be a minimum 10 feet in width, constructed in accordance with public improvement standards.

(5) *Tree Preservation.* Tree preservation is required in accordance with the provisions of EC 9.6885(2), Tree Preservation and Removal Standards.

(Added by Ordinance No. 20693, enacted July 12, 2023, effective August 18, 2023.)

9.8815 Willamette River Greenway Permit Approval Criteria – General.

Approval, approval with conditions, or denial of a Willamette River Greenway Permit not otherwise processed according to the provisions of EC 9.8812, shall be based on compliance with the following approval criteria:

(1) To the greatest possible degree, the intensification, change of use, or development will provide the maximum possible landscaped area, open space, or vegetation between the activity and the river.

(2) To the greatest possible degree, necessary and adequate public access will be provided to and along the Willamette River by appropriate legal means.

(3) The intensification, change of use, or development will conform with applicable Willamette River Greenway policies as set forth in the Metro Plan.

(4) In areas subject to the Willakenzie Area Plan, the intensification, change of use, or development will conform with that plan's use management standards.

(5) In areas not covered by subsection (4) of this section, the intensification, change of use, or development shall conform with the following applicable standards:

(a) Establishment of adequate setback lines to keep structures separated from the Willamette River to protect, maintain, preserve, and enhance the natural, scenic, historic, and recreational qualities of the Willamette River Greenway. Setback lines need not apply to water related or water dependent uses as defined in EC 9.0500.

(b) Protection of significant fish and wildlife habitats as identified in the Metropolitan Plan Natural Assets and Constraints Working Paper. Sites subsequently determined to be significant by the Oregon Department of Fish and Wildlife shall also be protected.

(c) Protection and enhancement of the natural vegetative fringe along the Willamette River to the maximum extent practicable.

(d) Preservation of scenic qualities and viewpoints as identified in the Metropolitan Plan Natural Assets and Constraints Working Paper.

Surface Water. Surface water in the Harrisburg Planning Area is made up of two streams and some intermittent drainage courses. The two streams are the Willamette River and Muddy Creek.

Willamette River. The Willamette River, the region's major river, and recently designated Heritage River, is a valuable resource in the Planning Area. Originally, it was the only year-round source of transportation in the Valley and Harrisburg's location and early growth can be traced to the River.

Historically, but less so today, the aggregate deposits found along the Willamette were an important part of the local economy. The River is also an important source of fish and wildlife habitat, a major source of scenic attraction, and an important recreational resource for the planning area.

Further information on the Willamette River is included in the section on the Willamette Greenway.

Muddy Creek and Intermittent Streams. Muddy Creek, a small stream which meanders along Northeast of the Planning Area, and drains the land East of the Planning Area. Small, intermittent drainage courses adjacent to the Planning Area include Lake Creek, draining land North of Harrisburg, and Camous Creek draining land east of the Planning Area. These streams and their riparian vegetation provide wildlife habitat and scenic values to the Planning Area.

GROUNDWATER

Groundwater is water that fills spaces in rock and around soil particles beneath the land surface. Precipitation, mostly in the form of rain, is the principle source of groundwater. Its existence depends on the porosity and permeability of a geologic material and its mineral quality is generally related to the geologic environment.

Availability in the Harrisburg Planning Area. Both of the two geological units existing in the Harrisburg area are good aquifers. The older alluvium of the terrace will yield from moderate to large quantities of water to wells.

Groundwater moves from areas of recharge to areas of discharge. The rate of which Groundwater is replenished depends upon the amount and intensity of precipitation, the infiltration capacity of the soils, and the ability of the underlying geological strata to transmit water.

The aquifers in the Willamette Valley are recharged mostly during late autumn and winter and are usually filled to capacity by January or February. Discharge occurs through seeps and springs adjacent to or in stream channels, by evapo- transpiration in areas where the water table is near the surface, and by pumping for wells. During the dry summer months, the rate of discharge exceeds the rate of recharge and the water table is lowered. The City Public Works Department monitors the water table at each well site.

Quality. Wells in the Planning Area that take water from the alluvial deposits beneath the Valley plain, and from the present flood plain of Willamette River contain relatively small concentrations of most dissolved minerals. However, concentrations of calcium and magnesium, tend to run high in the Planning Area, as does iron, so that the groundwater is

Sand and gravel have been important resources in the Harrisburg Planning Area. They occur along present and former courses of major rivers and, in the Planning Area, are found in the younger alluvium deposits that make up the present flood plain of the Willamette River. These deposits are about 30 feet thick in the Harrisburg area.

There is presently one sand and gravel extraction site within the Northwest portion of the Harrisburg Urban Growth Boundary, owned by Morse Brothers. Extraction from this site has permanently ceased due to a decrease in the amount of economically removable aggregate. Another aggregate extraction operation is located outside of, but adjacent to, the Southwest portion of the Urban Growth Boundary. Extraction at this site may continue into the future (See map No. 4). No significant aggregate resource sites exist within the Harrisburg Urban Growth Boundary.

Open Space and Scenic Resources. Goal 5 of the LCDC Statewide Goals and Guidelines calls for the conservation of open space and protection of natural and scenic resources. To achieve this goal, inventory of available open space must be taken and the impact of land use on open space and scenic resources should be considered.

Open Space. Open space consists of land in a natural state and land in agricultural or forest uses. Those undeveloped lands are not only important for the scenic resources they provide, but also for the protection of air, water, soil, and wildlife resources.

Open space is a steadily decreasing resource within the Urban Growth Boundary. Vacant industrial lands in the northern areas of the Urban Growth Boundary provide some open space, but they are destined to be converted to industrial use, and will therefore not provide open space in the future. Residential development in the eastern portion of the City is proceeding at a rapid rate and existing vacant lands in this portion of the City will be converted to home sites and will provide limited open space for the future.

Lands along the Willamette River that are generally unsuitable for building could provide valuable open space in the City of Harrisburg. These lands are currently designated industrial lands, but the bulk of these riparian lands are within the City's recently designated Safe Harbor Area, and would provide valuable recreational opportunities to residents if set aside as open space. Concerned residents and Council members have expressed interest in obtaining public access to these lands in order to connect the existing riverfront park to the City's Lagoon Property.

Harrisburg has a museum park, a small railroad park, a riverfront park and a newly acquired riverfront parcel north of the boat ramp which total slightly over 5 acres.

Scenic Views and Sites. Scenic views and sites are those that are valued for their esthetic appeal. The Willamette River, the historic Harrisburg Bridge and riparian areas provide the major scenic attractions for the City. These visual resources are appreciated for the intangible quality they add to the lives of residents and to those who pass through the area. This resource also has economic value as a tourist attraction since the demand for access to natural areas within easy driving is increasing while such resources are becoming scarce.

Rural farmland, views of distant mountains, and water-related views are all types of landscapes that have universal appeal as scenery. All of these are features of the Harrisburg Planning Area. Views of the Willamette River from any point of the bank within Harrisburg are especially attractive and noteworthy.

GOAL 15: WILLAMETTE GREENWAY

BACKGROUND INFORMATION

The Greenway encompasses lands of varying widths adjacent to the Willamette River from the Dexter Dam and Cottage Grove Reservoir in the South, to the Columbia River in the North, and includes the Multnomah Channel. The 1967 and 1973 State Legislatures acted to establish the Willamette River Greenway and set policies for its implementation. The purpose of the Greenway is to protect, preserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River.

The Greenway Statute (1973) originally directed the Oregon Department of Transportation (ODOT) to prepare a management plan for the Greenway in cooperation with local governments. The 1973 Legislature delegated the responsibility to the Land Conservation and Development Department (LCDC) to review and revise, if necessary, the plan prepared by ODOT. In addition, Senate Bill 100 requires all state agency plans to be consistent with the state-wide land use planning goals and local comprehensive plans. Since 1990 management of the Greenway has been vested with Oregon's State Parks and Recreation Department. ORS 390.314(2)(d).

In 1975, LCDC adopted a two step process to implement the Greenway Program consisting of: 1) the Greenway Preliminary Order, and, 2) Goal #15, the Willamette River Greenway Land Use Planning Goal.

The Preliminary Order required local governments to:

- Develop final Greenway boundaries within their jurisdictions in cooperation with ODOT;

- Consider issuance of conditional use permits and grant Greenway Extraordinary Exceptions where necessary;

- Incorporate the Greenway Plan in cooperation with ODOT into the local comprehensive plan and ordinances in compliance with the State-wide Willamette Greenway Land Use Planning Goal.

The LCDC Willamette Greenway Goal establishes the process for ongoing management of the Greenway. The long term management program requires local government to:

- Refine and update the Greenway Plan as necessary.

- Provide for the management and acquisition (if necessary) through local comprehensive plans; and,

- Cooperate with ODOT in its administration of the Greenway through the State Parks and Recreation Branch. (LCDC, 1975)

Implications for Harrisburg. Goal 15 of the LCDC Goals and Guidelines requires each city and county located in the Willamette River Greenway to incorporate its respective portions of the ODOT Greenway Plan in its comprehensive plan and implementing ordinances. This

goal requires comprehensive plans to be based on certain management considerations. The goal requires provisions for the following:

1. agricultural lands;
2. recreation;
3. access;
4. fish and wildlife habitat;
5. scenic qualities and views;
6. protection and safety;
7. vegetative fringe;
8. timber resource;
9. aggregate extraction;
10. development; and
11. Greenway setback.

Cities and counties must also establish ordinance provisions for the review of intensifications, changes of use, and developments that will insure compatibility with the Willamette River Greenway. These provisions must include the following:

1. Establishment of Greenway compatibility review boundaries that are not less than 150 feet from the ordinary water line within which review of developments shall take place;
2. Requirement to review intensifications, changes of use, and developments which insure to the greatest possible degree that:
    a. The intensification, change of use or development will provide the maximum possible landscaped area, open space, or vegetation between the activity and the river;
    b. Necessary public access will be provided to and along the river by appropriate means;
3. Requirements for a public hearing on each application and notification of the hearing to owners of contiguous property; and
4. A means of imposing conditions on the permit to carry out the purpose and intent of the Greenway. (LCDC, 1975)

Goal 15 also provides an alternative to the review process: Harrisburg may prepare and adopt a design plan and review procedure which must be compatible with the Greenway. If a design plan is adopted, a hearing will not be required on each application.

INVENTORIES

Goal 15 of the Statewide Goals and Guidelines requires information to be collected "to determine the nature and extent of the resources, uses, and rights associated directly with the Willamette River Greenway." This information is presented in the following inventories. The study area for the Harrisburg Greenway inventories includes the area between the Willamette River and the proposed ODOT Greenway boundary within Harrisburg's Planning Area. (see Map 1). This information will be useful in developing a Greenway management plan for Harrisburg.

Agricultural Land. Lands with soils in the S.C.S. capability classes I through IV are considered agricultural lands (see section on soils). Most of the land adjacent to the river in Harrisburg falls within this I through IV category (Map 3). These soils include Amity silty clay loam (11), Holcolm silt loam (III), and Dayton silt loam (IV). The remaining land has a variety of soils which are referred to as alluvial land and fall into SCS capacity class VIII. (SCS, 1975)

There are currently no agricultural uses in the Greenway area within the City. There is a small area being cultivated North of the City.

Aggregate Excavation and Processing Sites. There was a sand and gravel extraction site within the Northwest portion of the Harrisburg Urban Growth Boundary, owned and operated by Knife River. Extraction from this site has permanently ceased due to a decrease in the amount of economically removable aggregate. Knife River also owns an active aggregate extraction operation located outside of, but adjacent to, the Southwest portion of the Urban Growth Boundary. Extraction at this site is expected to continue for another five years or so. Knife River has entered into an agreement to sell approximately 100 acres of this property to the City of Harrisburg for a park. It is expected that the City will become the owner of the property in 2014, and that Knife River will be allowed to continue extracting aggregate on the property until the extracting is completed. No significant aggregate resource sites exist within the Harrisburg Urban Growth Boundary.

RECREATION.

Existing Sites and facilities. Recreational information is documented in the City's 1996 Master Park and Recreation Plan.

Historic and Archeological Sites. No historical and/or archeological sites have been designated within the Greenway boundary by the State Advisory Committee on Historic Preservation or the Linn County Historical Society. Local citizen input indicates that the most significant site in the area is the old Willamette River Ferry crossing which existed from approximately 1885 to the 1920's. Citizen's have suggested that a plaque commemorating the once important crossing site be placed at the location.

There is no record of archeological exploration occurring in the area. It is possible that stream erosion may have destroyed any archeological evidence that may have been in the study area.

Timber Resources. Riparian (related to the bank of a natural watercourse) vegetation contributes important scenic qualities to the River, helps stabilize the bank, and provides wildlife habitat.

The most prevalent tree species on the river bank is the black cottonwood, though this species is currently dying out along the Willamette River due to lack of natural flooding which historically supplied the required river soil for seed propagation. State-wide efforts are currently underway to discover how best to reestablish the Black Cottonwood to their historic range along the Willamette River. To the North there is a strip of trees that stretches along the river and continues south to the boat ramp. There is a narrow strip of trees South of the Bridge that continues to the Southern edge of the Planning Area. A larger area of trees (about 27 acres) is located East of the slough, which is near the Southern City boundary. This area is outside of the City, but some of it will become city property once the park land purchase is completed by the City from Knife River.

Fish and Wildlife. The Willamette River and its Greenway, provide important habitat within the study area for several species of fish and wildlife. An important anadromous fish spawning area exists near the Southern boundary of Harrisburg. Important River and streambed conditions occur at this location for redds (redds refer to fish spawning grounds).

Slough areas downstream from the spawning beds provide an ideal feeding location for the young fish which have remained in fresh water before beginning their journey to sea. The sloughs also provide ideal habitat for warm water fish species. Important waterfowl habitat is also provided where there is vegetation on the banks of the river and the sloughs.

Protection Plans for the newly listed Salmon species will impact development and land use decisions in the Planning Area.

The vegetative cover areas furnish cover and forage for many resident and migratory species of wildlife. Some of the most common species include deer, beaver, and various waterfowl species. (Dept of Fish and Wildlife, 1973) Bald Eagles nest in the area and are frequently sighted within the Planning Area. River otters have been observed frequenting the sloughs.

Significant Scenic and Natural Areas. There is a wealth of scenic views and sites in the study area. Areas that provide attractive scenery are primarily associated with riparian vegetation. Scenic views of the River and the opposite bank are available from many points of the bank in Harrisburg. These views, and the fact that they are easily accessible are an important asset to Harrisburg.

Significant natural features include the riparian vegetation, slough areas, and the anadromous fish spawning areas. Streamside vegetation provides erosion control, a buffer zone between the water and riparian land use, wildlife habitat and stream temperature control. Slough areas provide shelter for migratory waterfowl, warm-water fish species habitat, and feeding areas for the fry of anadromous fish. The retention of these features is important therefore, to the scenic attractiveness of the area and, of greater significance, to the maintenance of an environment conductive to fish and wildlife.

Areas of-Annual Flooding and Flood Plains. Harrisburg is located on an elevated portion of former Willamette River flood plain. With the increased number of upstream flood control projects, future serious flooding of the city is not very probable. As indicated by the flood plain map, (see Map 4), only a small part of Harrisburg is within the 100-year flood plain. A large part of the Greenway area outside of the City limits is within the 100-year flood plain. Land uses in this area are aggregate extraction, agriculture, and vacant land.

Land Currently Committed to Industrial, Commercial, and Residential. Information on existing land use is documented in the City's *Urbanization Study* (June 2013).

Hydrological Conditions. The hydrology of this section of the Willamette River is affected by conditions of a larger system called the Willamette River Basin, which includes all of the lands that drain into the Willamette River and its tributaries. This Basin encompasses about 12,000 square miles and includes lands in the Coast Range, Cascade Range, and the Willamette Valley. A full discussion about the entire basin is beyond the scope of this report, which-will primarily discuss specific conditions near Harrisburg.

The gradient of the Willamette River near Harrisburg is about 5 feet per mile. River water passing Harrisburg is draining from about 3,400 square miles. Mean discharge for an entire year is about 12,000 cubic feet per second (cfs). Maximum discharge, occurring during the winter, averages about 63,000 cfs; minimum discharge, occurring in summer, averages about 5,000 cfs. The flow is regulated by 8 reservoirs upstream. (USGS, 1970)

Meandering of the Willamette River and high stream flow volume produces stream-bank erosion problems, which are severe in this area (see Natural Hazards section). The U.S. Army Corps of Engineers has placed rip rap from Territorial Street to just South of the Highway 99E bridge and this has helped alleviate the problem for that area.

Problems exist in other areas of the City, however, as exemplified by a past occurrence which is a concern to the City. Morse Brothers, the predecessor to Knife River, was required by order of the Corps of Engineers to remove a revetment constructed of reject pre-stress beams and excess concrete from mixer trucks. This allowed River channel change resulting, thus far, in river erosion removal of several acres of Morse Brothers' land as well as adjacent agricultural land. That area, located adjacent to the downstream slough, will continue to be eroded unless some form of bank stabilization is implemented.

The City's Sewage Lagoon Property North of the Planning Area is also severely impacted by stream bank erosion, and stabilization efforts will be required to prevent further erosion.

Ecologically Fragile Areas. The areas, which could be classed as ecologically fragile, include the previously mentioned slough areas and their adjacent vegetation and fish spawning area. The fish spawning area is, of course, subject to modification by hydrologic activity. At present, no man-related changes have affected this spawning area.

The Oregon Fish and Wildlife Department has sought the cooperation of Morse Bros., Inc., owners of the land adjoining the slough areas, in retention of the integrity of these areas prior to, during and after aggregate extraction and processing activity. To date, the company has been cooperating with the Department in this endeavor.

Other Uses. Other uses in the Greenway include some City shops in the Southern part of Harrisburg. There are also several city streets and the Highway 99E bridge. River use, other than recreational, includes dilution and transport of the treated wastes from Harrisburg's sewage lagoon.

THE GREENWAY BOUNDARY IN HARRISBURG

The Department of Transportation recommendation for a Greenway boundary met with considerable opposition from the citizens of Harrisburg, especially those owning property

within the recommended boundary, when the boundary was proposed in 1976. However, after considerable meetings a boundary was approved by the City and LCDC.

GOAL 5: OPEN SPACES AND HISTORICAL AREAS, AND NATURAL RESOURCES

To conserve open space and protect natural and scenic resources

GOALS:

Conservation and protection of, Harrisburg's open spaces, and natural, and scenic resources.

Recognition, protection, and enhancement of Harrisburg's historic resources and heritage, and, promotion of public awareness and participation in historic preservation.

POLICIES:

1. Integrate the protection and enhancement of Open Space into Goal 8, Recreation.
2. Develop and maintain a current map and inventory areas of significant environmental concern including:
    a. Floodway boundaries identified by the Federal Emergency Management Agency (FEMA)
    b. Historic buildings and landmarks identified in the Linn County Historic Register and Harrisburg's Register of Historic Resources.
    c. Wetlands, as identified by the National Wetlands Inventory Maps and the Local Wetlands Inventory.
    d. Fish and wildlife in the riparian zone.
    e. Significant riparian corridors as identified by the City's Safe Harbor Ordinance and boundary map.
3. Promote the development of recreational trails and interpretive opportunities along the Willamette River consistent with Harrisburg's Park and Recreation Master Plan and Heritage River Guidelines.
4. Encourage Willamette River enhancement programs through coordination between civic, school, and natural resource agencies.
5. Preserve the scenic qualities of the Willamette River.
6. Identify unique historic landmarks in Harrisburg and when appropriate seek inclusion in the Harrisburg Register of Historic Resources.
7. Encourage restoration and renovation of historic properties throughout the city and preserve the historic integrity of the community.

IMPLEMENTING MEASURES:

1. The City shall protect and provide for the historical heritage of the City of Harrisburg by protecting structures identified in the Harrisburg's Register of Historic Resources and downtown Historic Overlay Zone. The City shall:
    a. Encourage the continued operation and improvement of the historical museum
    b. Promote incentives, such as appropriate building code exemptions, to encourage historic preservation efforts throughout the community.

    c. Adopt design standards for use by the Planning Commission to ensure that appropriate infill takes place in historic districts.
    d. Protect historic resources from conflicting uses through implementation of alteration and demolition review procedures established in the Harrisburg Zoning Ordinance.
2. The Harrisburg Register of Historic Resources is the official City list of significant historic resources, which warrant protection. The Historic Resources Provisions of the Harrisburg Comprehensive Plan establish the Harrisburg Register of Historic Resources. (See Appendix B). The City shall keep the local historic inventory current.
3. The City of Harrisburg shall protect natural scenic resources by encouraging the conservation of significant riparian areas, open space, fish and wildlife habitat, and recreation trails. These resources shall be protected to the maximum extent feasible as set forth in the City's Safe Harbor Ordinance.
4. Prepare development and landscape standards for areas of significant environmental concerns. The City shall:
    a. Maintain an inventory and map related to these sites which delineate their boundaries and other pertinent data relating to the resource.
    b. Review development proposals to minimize negative impacts on the resource. Procedures shall be designed to mitigate any lost values to the greatest extent possible.
5. The City shall designate and map additional areas having special public value, and of significant environmental concern in terms of one or more of the following:
    a. Economic value, e.g. tourist attraction, agricultural business, job retention;
    b. Recreation value, e.g. rivers, streams, trails, wetlands, play fields;
    c. Historic values, e.g. buildings, sites or landmarks;
    d. Public safety, e.g. municipal water supply storage or watersheds, flood plains, and stream bank erosion areas;
    e. Scenic value, e.g. areas valued for their special character or specific natural features;
    f. Archeological value, e.g. areas valued for their historical, scientific and cultural value.
6. Require that legislative and quasi-judicial action affecting areas of significant environmental concern meet all applicable local, state, and federal regulations.

GOAL 15: WILLAMETTE GREENWAY

To protect. enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

GOALS:

To protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic, and recreation qualities of land along the Willamette River.

POLICIES:

1. Lands West of 1st Street from Safari Motor Coaches RV parking area in the north to Fountain Street in the south, shall be set aside for open space and recreation
2. The Willamette River Greenway shall be shown on the Harrisburg Comprehensive Plan Map and Zoning Map.
3. The City will review all intensification, change of use and developments to ensure compatibility with the Willamette River and the Willamette River Greenway Goal.
4. The City will work with appropriate Federal, State and local agencies to:
    a. Protect resources associated with the Willamette River and the Greenway;
    b. Alleviate problems associated with the Willamette River and the Greenway, such as streambank erosion and bar accretion.
    c. Provide public access to the river in urban and urbanizable areas.
5. The City will continue to work with property owners and public agencies to acquire the land for open space and recreational use north of Safari Motor Coaches RV park north to the City's Sewer Lagoon property.

extent of its jurisdictional authority in the maintenance of existing Wilderness Areas located within Lane County. Should any of these Wilderness Areas ever revert to private ownership, the County will apply the Goal 5 evaluation process as required by Goal 5.

3. The 1983 Revision to the 1981 Recreational Resources Working Paper identifies six major areas of outstanding scenic value in Lane County. These areas are to be considered '3C' resources in the terms of OAR 660-16-000/25 ('Coastal Strip,' McKenzie Valley,' Willamette Highway/Salt Creek Corridor' and 'Coburg Ridge'), '3B'resources ('Willamette Greenway') and '2A' resources ('ODOT Scenic Areas'). Conflicting uses in '3C' areas shall be regulated by the management activities of the Siuslaw and Willamette National Forests, the Oregon Forest Practices Act and the County's rural resource and Coastal zones (on private land). Scenic resources beyond those referenced shall be considered '1B' resources until the County can initiate a program to identify areas of outstanding scenic value.

   Initiate a program to identify areas of outstanding scenic value, identify and resolve conflicts after consideration of social, economic, energy and environmental consequences and protects sites for which conflict resolution indicates protection is desirable. This program will be initiated prior to the next scheduled Plan update (five years from adoption of revised Plan). The County is encouraged to investigate and utilize fee acquisition, easements, cluster developments, preferential assessment, development rights acquisition and similar techniques to implement this policy.

4. The County shall recognize and acknowledge existing and potential recreational trails designated by the Oregon Parks Outdoor Recreation Plan, shall cooperate with the Oregon Department of Transportation in the identification of specific routes for potential trails and in the completion of applicable steps of OAR 660-16-000/025. Existing developed trails shall be displayed on the County's planning documents.

5. The County shall cooperate with appropriate state and federal agencies in the selection of wild and scenic rivers, and will cooperate with theses agencies in the completion of applicable steps of OAR 660-16-000/025 in the making such selections.

<u>Energy</u>

1. Lane County shall identify energy resource areas with in the County and protect such areas through the use of existing ordinances and regulations. Such regulations shall address hydroelectric, geothermal, and wind power sites.

GOAL FIFTEEN: WILLAMETTE RIVER GREENWAY

1. Maintain and support continuation of existing uses within the Greenway Boundary.

2. Intensification and change of use of lands within the Greenway Boundary shall remain compatible with the protection, conservation and enhancement of the natural, scenic, historic, agricultural, economic and recreational qualities of the Willamette River Greenway Program.

3. Recognize that the Greenway consists of a multitude of resources and due to continued growth, 100 percent protection to all resources will never be realized.

4. Protect, conserve and preserve important economic uses such as, but not limited to, agriculture, sand and gravel, tourism and recreation, fish and wildlife, urban lands and timber within the Greenway.

5. Maintain sufficient water flows to support water uses such as municipal, agricultural, industrial, natural resources (i.e., fish, aquatic life, wildlife) and recreation within the Greenway.

6. Prioritize water quality management controls along the Coast Fork and the Main Stem, especially in the Metropolitan area.

7. Acquisitions for Greenway purposes must be consistent with noninterference or interruption of farm uses.

8. Recognize that DOT cannot condemn for a scenic or use easements on lands devoted to farm use; however, easements may be given by owners of lands being used for farm purposes.

9. Protect water rights and access to the river for irrigation purposes.

10. Development shall be directed away from the river, to the greatest degree possible.

11. A setback line shall be established in order to protect, maintain, preserve and enhance the natural, scenic historic and recreational qualities of the Greenway.

12. The partial harvest of timber shall be permitted beyond the vegetative fringes in areas not covered by a scenic easement when the harvest is consistent with an approved plan under the Forest Practices Act, or, it not covered by the FPA, then with an approved plan under the Greenway compatibility review provisions. Such a plan shall insure that the natural scenic qualities of the Greenway will be maintained to the greatest extent feasible or restored within a brief period of time.

13. Active, zoned, or designated aggregate extraction and/or processing sites shall be protected from noncompatible uses which would preclude future utilization of the resource.

14. Where feasible, point bar removal shall be accommodated by temporary access points.

15. In assessing the impact which an extraction and/or processing operation has on the natural and cultural attributes of the Greenway, the County Shall require (within its realm of authority) mining methods which reduce of mitigate adverse impacts, as well as considering the economic and other benefits which will accrue in both short and long terms.

16. Aggregate operations occurring within the Greenway shall comply with the provisions of the applicable state statutes and local zoning ordinances in regard to safety, operational standards, public review, reclamation and protection of Greenway values.

17. The relationship between the demand for the resource and the amount and location of land available for aggregate extraction and/or processing shall be closely monitored, so as the ensure the future availability of aggregate material in close proximity to urban areas and other points of use. Such monitoring shall be conducted in conjunction with the industry and state and local efforts.

18. Protect vegetation resources which are identified as having unique recreational, aesthetic, scientific or wildlife habitat values. Encourage acquisition of these areas or obtain a protective scenic easement.

19. The County shall require to the maximum feasible extent the protection of the vegetative fringe within the Greenway, and shall require the re-establishment of vegetative cover where it has been significantly removed during the land development process.

20. Conserve the rural character of the river bank as a primary objective within the Greenway.

21. Encourage a river-related mixture of industrial, commercial, residential and public land uses where appropriate in the Greenway.

22. In instances where a public agency has acquired productive farmlands or other resource lands as long-range reserve for recreational use, if possible, such property should be leased back for agricultural or other resource use until it is required for public purposes.

23. Provide and encourage use of public lands within the Greenway.

24. Accommodate public access to the river and to public lands within the Greenway by:
    a. Controlled, clearly designated, access points;
    b. Establishment of an integrated system of safe river landings, hiking and cycle paths, and public roads leading in and out of the Greenway at strategic locations:
    c. Use of a limited number of access points, each with improved facilities, good roads and high-visibility connectors.

25. Provide appropriate levels of police protection in those areas subject to public use.

26. Encourage additional police security for private and publicly owned lands within the Greenway.

27. Protect, conserve or preserve the scenic and recreational qualities of the lands within the Greenway Boundary.

C. SCENIC VIEWS AND SITES

903.420 Background

The gradual, erosional types of change especially affect scenic views of the landscape. Water areas, outlying buttes and foothills are especially visible and provide a picturesque landscape.

[Adopted 80-335 eff 9/2/80]

903.425 Policies for scenic views

(A) The policies for scenic views are set forth in subsection (B) of this section.

(B) *Policies*.

(1) Linn County shall cooperate with the U.S. Forest Service and the U.S. Bureau of Land Management in reviewing planning efforts for outstanding scenic views and sites occurring on federal lands.

(2) Linn County shall protect the scenic resources of McDowell Creek Falls Forest Park through continued ownership and management of the site as a county Forest-Park.

[Adopted 80-335 eff 9/2/80; amd 99-190 eff 5/19/99]

903.427 Policy implementation for scenic views

(A) The policies set forth in LCC 903.425 (B) shall be implemented by the following:

(1) The Agricultural Resource, Forest Resource, and Farm/Forest plan designations shall be used on the Linn County Comprehensive Plan to conserve open space, protect the scenic resource and sensitive fish and wildlife habitats. Land use proposals subject to Linn County review that have undesirable impacts on these resources shall be reviewed during the plan amendment, zone amendment and conditional use permit process.

[Adopted 80-335 eff 9/2/80; amd 99-190 eff 5/19/99]

D. HISTORIC AND CULTURAL AREAS

903.430 Background

Historic and prehistoric cultural areas provide an understanding of past land uses, life styles and cultural values. It provides a sense of social continuity and evidence of earlier culture's relationships with their environments. Such resources are not fully inventoried in Linn County. Without adequate knowledge of the remaining areas and their interrelationships, significant historic areas cannot be retained as portions of the cultural landscape.

[Adopted 80-335 eff 9/2/80]

903.435 Policies for historic and cultural areas

(A) The policies for historic and cultural areas are set forth in subsection (B) of this section.

(B) *Policies*.

(1) Linn County will maintain an updated inventory of historic resources for use as a source of background information for historic preservation planning in the county.

(2) Historic resources in Linn County will be evaluated for significance with a system that is based on National Register of Historic Places criteria.

(3) Linn County will develop and maintain a register of historic resources determined to be significant and worthy of preservation.

(4) The Historic Resource Commission is responsible for historic resource planning in the county.

(5) Linn County will seek to coordinate its historic preservation efforts with historic preservation programs, organizations, and agencies that exist at the local, private, federal, and state levels.

(6) When needed, Linn County will seek available state, federal, and other outside funding for historic resource survey, planning, repair, maintenance, rehabilitation, and restoration.

(7) Approval from the county is required for alteration or demolition of structures listed on the National Register of Historic Places and structures voluntarily listed on the Linn County Register of Historic Resources.

HRO proposals than those charged for review of other similar land development proposals.

(E) The policy set forth in LCC 903.435 (B) (9) shall be implemented by the following:

(1) Linn County will publish a brochure that will include information about historic preservation in the planning process and will publish a tour map of historic resources in Linn County.

(F) The policy set forth in LCC 903.435 (B) (10) shall be implemented by the following:

(1) An inventory of archaeological sites has been proposed by OSU in the Willamette Valley.

[Adopted 80-335 eff 9/2/80; amd 99-190 eff 5/19/99; amd 01-627 §1 eff 11/20/01; amd 11-354 §1 eff 10/12/11]

E. WILDERNESS, RECREATION TRAILS, AND SCENIC WATERWAYS

903.440 Background

Wilderness, Oregon recreation trails, and scenic waterways are operated by federal or state agencies in response to national and statewide desires. Wilderness impacts are largely the result of recreational use and regulated by USFS management policies. The Pacific Crest Trail extends for over 30 miles in Linn County. As the purposes of wilderness and recreational trails conflict somewhat, the trail poses management problems in the two wildernesses. Scenic waterway status for the North and South Santiam Rivers is still pending and must await adequate study.

[Adopted 80-335 eff 9/2/80]

903.445 Policies for wilderness, recreation trails, and scenic waterways

(A) The policies for wilderness, Oregon recreation trails, and scenic waterways are set forth in subsection (B) of this section.

(B) *Policies*.

(1) Linn County shall cooperate with and support the Oregon Parks and Recreation branch's efforts to establish a trails system linking the urban areas of Linn County to the national trails system.

(2) The development of a major facility shall be accomplished in a manner not having a significant adverse impact on a sensitive fish or wildlife habitat or scenic or historic area.

(3) Linn County shall cooperate with the Oregon Parks and Recreation branch's efforts to analyze segments of the North and South Santiam Rivers for possible identification as Oregon scenic waterways. When the studies have been completed, Linn County shall determine whether sufficient local support exists to warrant designation as scenic waterway.

(4) Linn County shall cooperate with federal efforts to preserve and properly manage the wilderness resources of Mt. Jefferson and Mt. Washington Wilderness.

[Adopted 80-335 eff 9/2/80; amd 99-190 eff 5/19/99]

903.447 Policy implementation for wilderness, recreation trails, and scenic waterways

(A) The policy set forth in LCC 903.445 (B) (4) shall be implemented by the following:

(1) The Linn County agency involvement program includes federal and state agencies involved in wilderness management.

[Adopted 80-335 eff 9/2/80; amd 99-190 eff 5/19/99]

F. FISH AND WILDLIFE AREAS AND HABITATS

903.500 Background

(A) Other components within open space areas are specifically threatened by land use activities.

(B) Fish and wildlife populations in Linn County annually add substantially to the local economy, but the sensitive habitat areas supporting this resource are being lost. The filling and draining of aquatic habitat and wetlands, the clearing of riparian zones, and the removal and burning of roadside vegetation, hedgerows and unused areas remove or reduce the capabilities of sensitive habitat.

(C) High density development in or adjacent to sensitive habitat, the fragmentation of resource lands to small parcels and normal agricultural and

XI. WILLAMETTE RIVER GREENWAY

905.700 Willamette River Greenway; background

(A) The Willamette River Greenway is the embodiment of the desires of the people of Oregon to protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River. It is not the intention of the greenway program to take land away from private riparian owners or to create a corridor of public land. Indeed, the continued use of greenway land for such purposes as farming is encouraged. However, it is recognized that our ability to protect this heritage for future generations is greater now than it will ever be again. In a valley with high economic growth, the pressures to convert riverside lands to uses which would detract from the rich and unique river environment will be great.

(B) Much of the land within the greenway is restricted from developmental uses by the nature of the land and by present uses. In Linn County 95 percent of greenway lands are in the Agricultural Resource designation. In addition, over 82 percent of the river bank is within the floodplain and is not suitable for most forms of development.

(C) The Willamette River Greenway is a means for achieving local control of some land use decisions. For a greenway landowner, this means any proposed development, change or intensification of use must be compatible with greenway goals. It does not change the landowner's right to prevent trespass. For greenway users, this program insures continued enjoyment of a precious resource while emphasizing responsibility to the greenway environment and landowners. While the public use of private lands is forbidden, there have been numerous units of greenway land purchased, or identified for purchase, from willing sellers. These will be developed in a variety of ways for public use.

(D) The idea of a greenway was first formalized into state law in 1967. In 1973, the state legislature gave responsibility to the Oregon Department of Transportation for writing a plan. They also gave responsibility to the Land Conservation and Development Commission (LCDC) for evaluation and much of the administration of this plan. In 1975, the LCDC established Goal #15, the Willamette River Greenway Goal. After extensive public hearing, LCDC adopted the greenway boundary in 1977. Maps with the exact boundaries are available in the Linn County Planning and Building Department.

(E) Linn County adopted its "Criteria and Standards for Willamette River Greenway Conditional Use Permits" in 1978. In 1979, a background report was written describing cultural and natural greenway resources. The Central Linn-Harrisburg and Albany Planning Advisory Committees developed greenway policies for Linn County. A county ordinance was then developed establishing the Willamette River Greenway Management Overlay zone.

[Adopted 80-335 eff 9/2/80]

905.710 Goal for Willamette River Greenway

Protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic, and recreational qualities of lands along the Willamette River.

[Adopted 80-335 eff 9/2/80]

905.720 Policies for Willamette River Greenway

(A) The policies for the Willamette River Greenway are set forth in subsection (B) of this section.

(B) *Policies*.

(1) The continued private use of greenway land for such purposes as farming is encouraged and consistent with the goals and objectives of the greenway. The majority of these lands shall remain in private ownership. Scenic easements shall be encouraged.

(2) Most public access should be in urban areas and public parks. Only limited public access shall be provided in rural areas.

(3) All public access and recreational facilities shall be located, designed, and operated so as to minimize adverse effects including tres-

pass and vandalism to adjacent property or farm use.

(4) Preservation, restoration, or enhancement of areas of ecological, scientific, historical, or archeological significance shall be considered if affected by development proposals.

(5) Conditional uses in the greenway shall be consistent with the purposes of the greenway.

(6) Any proposed development, change, or intensification of use shall be compatible with the site, the surrounding areas, and the environment. It shall provide for the public safety and protection of property, especially from vandalism and trespass, to the maximum extent practicable.

(7) Recreational facilities shall be provided without substantially affecting the long-term capacity of the land for farm use.

(8) A minimum building setback line of 100 feet from the ordinary high water line of the Willamette River (usually represented by the line of permanent vegetation) shall be established for all structures not water related or water dependent.

(9) Development shall be located away from the river to the greatest possible extent.

(10) Development, change, or intensification of use shall provide the maximum possible landscaped area, aesthetic enhancement, open space, or vegetation between the activity and the river.

(11) Sensitive fish and wildlife habitat, as identified by the Oregon Department of Fish and Wildlife, shall be protected. This shall include, but not be limited to, fish spawning sites, fresh water marshes, great blue heron, osprey, and eagle nest trees and an adjacent zone of trees around these nest trees.

(12) The natural vegetative fringe along the river shall, to the maximum extent practicable, be maintained for the purposes of assuring scenic quality, protecting fish and wildlife, protecting the bank from erosion, and screening uses from the river.

(13) Scenic qualities and viewpoints shall be preserved.

(14) The partial harvest of timber shall be permitted beyond the vegetative fringes in areas not covered by a scenic easement when the harvest is consistent with an approved plan under the Forest Practices Act, or, if not covered by the Forest Practices Act, then with an approved plan under the greenway compatibility review provisions. The plan shall insure that the natural scenic qualities of the greenway shall be maintained to the greatest extent practicable, or restores within a brief period of time.

(15) The quality of air, water, and land resources in or adjacent to the greenway shall be preserved in the development, change, or intensification of use of land within the green way.

(16) Extraction of aggregate deposits shall be conducted in a manner designed to encourage multiple use. Extraction shall minimize adverse effects on water quality, fish and wildlife, vegetation, bank stabilization, stream flow, visual quality, noise, and safety. Necessary reclamation shall be guaranteed.

(17) The development of areas acquired for public use shall be reviewed by the county through public hearings to determine compatibility with other activities along the river.

(18) The county shall designate the site for Bowers Rock State Park as Agricultural Resource on the *Plan* map and Exclusive Farm Use on the zoning map. Development of the park is not supported at this time, it is recognized that Oregon laws and the greenway goal require that county land use designations and ordinances permit the development, use and maintenance of Bowers Rock State Park.

(a) The greenway portion of the Bowers Rock park site may be developed by the state for park use.

(b) The following development considerations shall be reviewed in accordance with the conditional use provision in the zoning ordinance:

(i) Access, including ingress and egress and overall road improvements;

(ii) Parking;

Oregon Department of Transportation

SCENIC BYWAYS

Background

While every state highway has certain scenic attributes (see Policy 5B), the Oregon Transportation Commission has designated Scenic Byways throughout the state on federal, state, and local roads which have exceptional scenic value (see map, Figure 11). In 1998, the federal government designated two of these routes as All- American Roads and four as National Scenic Byways. The Oregon Transportation Commission may designate additional state byways. To protect the scenic assets of its Scenic Byways, ODOT will develop guidelines for aesthetic and design elements within the public right-of-way that are appropriate to Scenic Byways. The Scenic Byways Policy recognizes that safety and performance issues may cause the need for physical improvements to Scenic Byways, and seeks to balance these needs with the preservation of scenic values.

Policy 1D: Scenic Byways

It is the policy of the State of Oregon to preserve and enhance designated Scenic Byways, and to consider aesthetic and design elements along with safety and performance considerations on designated Byways.

Action 1D.1

Develop and apply guidelines for appropriate aesthetic and design elements within the public right-of-way on Scenic Byways. The purpose of these guidelines is to preserve and enhance the scenic value while accommodating critical safety and performance needs. The elements should include guidelines for turnouts, overlooks, signage, and visual treatment of the highway infrastructure.



The Historic Columbia River Highway is both a State Scenic Byway and an All American Road

Action 1D.2

With guidelines in place, develop management priorities for Scenic Byways in management plans and corridor plans.

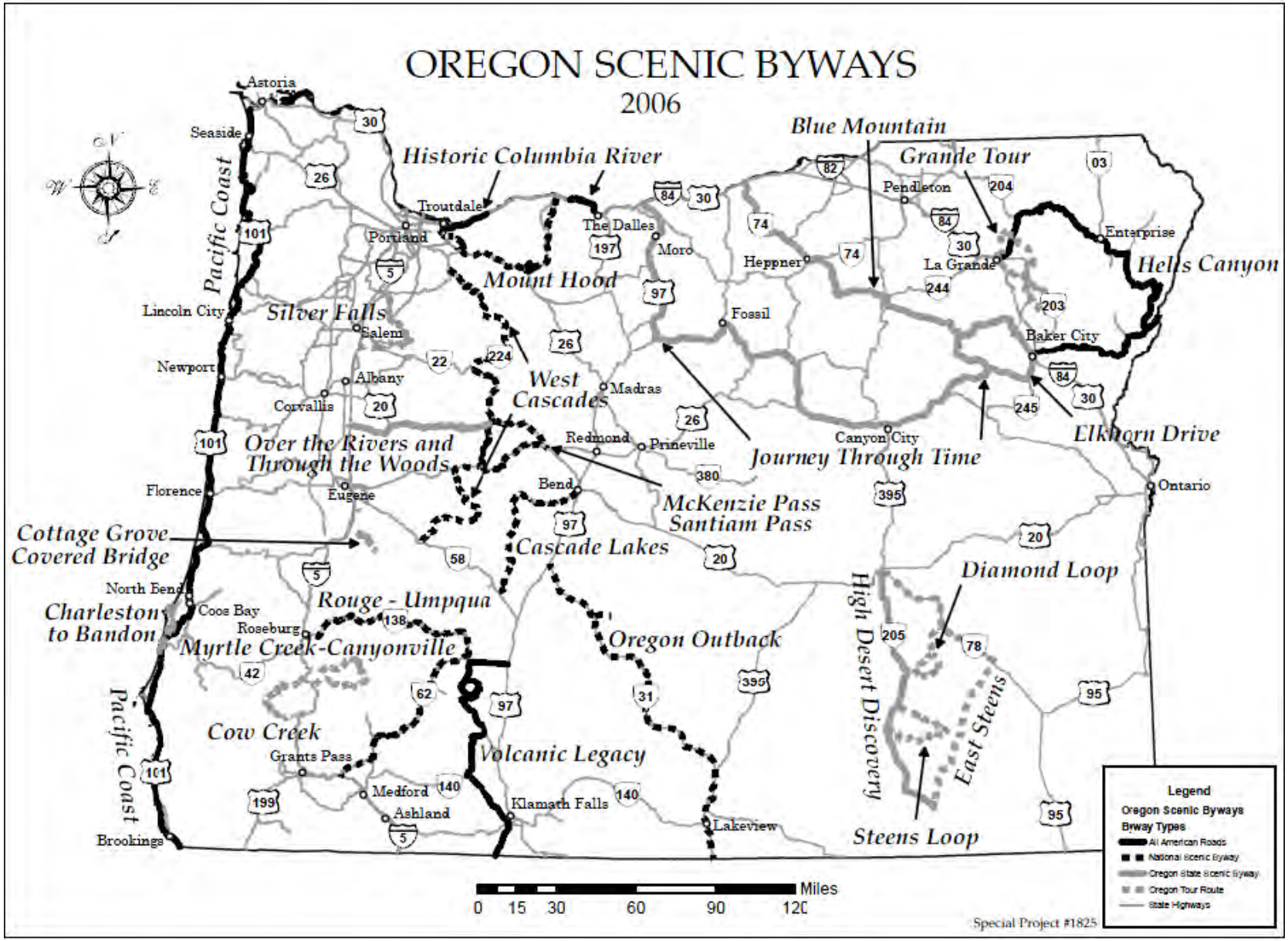


Figure 11: Designated Scenic Byways

Action 1D.3

Consider impacts to the scenic qualities of Scenic Byways when designing plans and projects.

Action 1D.4

Develop resource management plans and maps that describe ODOT's maintenance actions for roads which are designated Oregon Scenic Byways, including restricted activity zones, property to be used for disposal of slide debris and other material, and unsold state properties to be considered for ODOT retention. Identify scenic resources and existing vista opportunity locations on the maps. Include guidelines for maintenance activities where scenic resources are a factor. Ensure that ODOT highway maintenance activities are compatible with Scenic Byway management plans.



LIFELINE ROUTES

Background

Earthquakes, flooding, landslides, wild fires, and other natural and man-made disasters may destroy or block key access routes to emergency facilities and create episodic demand for highway routes into and out of a stricken area. ODOT's investment strategy should recognize the critical role that some highway facilities, particularly bridges, play in emergency response and evacuation. In some cases, the most cost-effective solution to maintaining security in these lifeline routes involves investment in roads or bridges owned by local jurisdictions. To the extent feasible, investments should be made without regard to roadway jurisdiction in order to provide the greatest degree of lifeline security for the available resources. ODOT will work with local governments to further define and map a network of lifeline routes. The lifeline network will focus on serving those communities which are particularly susceptible to isolation by virtue of their limited highway access.

Policy 1E: Lifeline Routes

It is the policy of the State of Oregon to provide a secure lifeline network of streets, highways, and bridges to facilitate emergency services response and to support rapid economic recovery after a disaster.

Action 1E.1

Define the criteria for lifeline routes to respond to short and long-term needs and, working with local jurisdictions, agencies, and emergency service providers, designate the lifeline network for the State of Oregon.



SCENIC RESOURCES

Background

The introduction to the Oregon Historic and Scenic Highway Program developed in 1985 is still true: "Oregonians have long recognized that preservation of the state's historic and scenic resources plays a vital role in the enhancement of the state's economic base, and in maintaining its citizens' pride in and respect for its historic and natural resources. Oregon's immense wealth of history and diverse scenery provide unlimited recreation potential for residents and visitors alike…" Even early efforts to develop a state transportation system foresaw the importance of preserving the state's scenic and historic values. Construction of the Columbia River Highway in the Columbia Gorge in the 1910s "focused on the need to construct a scenic highway that would complement the beauty of the area."

Since then, a number of state and federal efforts have directed ODOT to preserve or protect historic and scenic features of the state highway system. For example, the 1987 Oregon Legislature declared that it is the state's policy to "preserve and restore the continuity and historic integrity of the remaining segments of the Historic Columbia River Highway." This highway is included in the Columbia River Gorge National Scenic Area, and the Historic Columbia River Highway Master Plan guides its management. Federal, state and local policies and regulations also recognize the need to balance protection of scenic resources with economic development.

The Scenic Resources Policy is intended to guide project planning, development, construction and maintenance for state highways in a consistent manner with regard to scenic resources and aesthetics. This policy applies to all state highways, not only designated Scenic Byways.

Scenic resources, as addressed in this policy, include the combination of structural, historic, cultural, and natural features within highway rights-of-way. Where appropriate, ODOT may coordinate with other agencies and property owners to address scenic resources that lie beyond the rights-of-way. In addition to views from the highway, views of the highway from other areas should be considered, particularly on designated Scenic Byways.

Policy 5B: Scenic Resources

It is the policy of the State of Oregon that scenic resources management is an integral part of the process of creating and maintaining the state highway system. The State of Oregon will use best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

Action 5B.1

Coordinate scenic and cultural resources management with appropriate federal, state and local agencies, tribal governments and special interest groups.

Action 5B.2

Coordinate with federal and state agencies, tribal governments, local governments and property owners to encourage aesthetic considerations outside the state highway rights-of-way, such as land use controls for signs, urban design, rural development, utilities and vegetation.

Action 5B.3

Design transportation facilities that consider visual quality with functional requirements, including safety and other transportation needs.

Action 5B.4

Use best management practices to minimize impacts to scenic resources, and preserve and/or enhance visual quality within the state highway right-of-way when improving and maintaining the state highway system.

Action 5B.5

Identify criteria, and measure and evaluate scenic resources management performance on a regular basis.

Action 5B.6

Develop an inventory system that identifies scenic resources on unsold state lands that may be used for visual mitigation on designated Oregon Scenic Byways and Wild and Scenic Rivers adjacent to state highways.

Action 5B.7

Inventory and map historic resources within the state highway right-of-way including archaeological sites, trails, stone walls, buildings, bridges and other significant antiquities.

Action 5B.8

In project designs, include aesthetic elements that enhance the quality of system improvements. Examples of aesthetic elements include plantings and attractive finishes on poured concrete structures.

C. Environmental Resources Element

The Environmental Resources Element addresses the natural assets and hazards in the metropolitan area. The assets include agricultural land, clean air and water, forest land, sand and gravel deposits, scenic areas, vegetation, wildlife, and wildlife habitat. The hazards include problems associated with floods, soils, and geology. The policies of this element emphasize reducing urban impacts on wetlands throughout the metropolitan area and planning for the natural assets and constraints on undeveloped lands on the urban fringe.

Numerous local efforts reflect a positive attitude by the community toward the natural environment. For example, the Eugene-Springfield metropolitan area has a long history of commitment to local programs directed toward problems of air and water quality. Examples of regional parks that provide significant public open space areas for metropolitan residents include Eugene's Skinner Butte, Spencer Butte, Alton Baker, and Hendrick's Parks and Whilamut Natural Area; Lane County's Howard Buford Recreation Area (Mt. Pisgah); and Willamalane Park and Recreation District's Clearwater Park, Eastgate Woodlands, and Dorris Ranch. Eugene has focused special planning efforts toward controlling development and maintaining the scenic and environmental assets in the South Hills of the city. A tax levy passed by Eugene voters is resulting in additions to the park and open space system in the metropolitan area. Lane County, Springfield, and Eugene all contribute to the local success of the Willamette River Greenway (Greenway) program.

The natural environment adds to the livability of the metropolitan area. Local awareness and appreciation for nature and the need to provide a physically and psychologically healthy urban environment are reasons for promoting a compatible mix of nature and city. Urban areas provide a diversity of economic, social, and cultural opportunities. It is equally important to provide diversity in the natural environment of the city. With proper planning, it is possible to allow intense urban development on suitable land and still retain valuable islands and corridors of open space. Open space may reflect a sensitive natural area, such as the floodway fringe, that is protected from development. Open space can also be a park, a golf course, a cemetery, a body of water, or an area left undeveloped within a private commercial or residential development. Agricultural and forested lands on the fringe of the urban area, in addition to their primary use, provide secondary scenic and open space values.

Air and water resources are especially vital in an urban area. Internal and external factors contribute to problems associated with air quality and water quality and quantity, but techniques are available to help reduce these problems and make the environment more livable.

The compact urban growth form concentrates urban development and activities, thus protecting valuable resource lands on the urban fringe. But concentrating development increases pressures for development within the urban growth boundary (UGB), making planning for open space and resource protection a critical concern within that boundary.[26] Planning can ensure the coexistence of city and nature; one example is the Greenway.

[26] As explained in the *Metro Plan* Preface and Chapter I, Eugene, Springfield and Lane County are taking incremental steps to transition from a single "metropolitan UGB" to two separate UGBs, "the Eugene UGB" and "the Springfield UGB." The general references to "the UGB" within this Environmental Resources Element of the

5. Statewide Planning Goal 15 mandates local governments to establish the Greenway boundaries, allowed uses within the Greenway and potential acquisition areas.

6. Eugene, Springfield, and Lane County have received final Greenway boundary approval by the LCDC.

7. The jurisdictional area of the *Metro Plan* was found to be in compliance with Goal 15 on September 12, 1982.

8. The following permits are required by Eugene, Springfield, and Lane County to implement Statewide Planning Goal 15 within their respective areas of jurisdiction as defined in Chapter II-D:

    a. The City of Eugene requires Greenway Permits for any activity in the Willamette Greenway involving intensification of use, change in use, or development.

    b. The City of Springfield requires a Discretionary Use Permit for any change or intensification of use, or construction that has a significant visual impact in the Willamette Greenway Overlay District, which is combined with a "Greenway Setback Line."

    c. Lane County requires a Greenway Development Permit for intensification or change of use or development allowed in applicable zones, including public improvements and including partitions and subdivisions as defined in LC 13.020 for lands within the boundaries of the Willamette River Greenway.

9. Local jurisdictions retain the primary responsibility for implementation of the Willamette River Greenway goal.

10. The metropolitan area's river and waterway corridors require protection to maintain and enhance natural, scenic, environmental, and economic qualities of these waterways.

11. The three jurisdictions have cooperatively developed a public park system and bicycle-pedestrian trails along the Willamette River Greenway.

12. Residential and commercial development along the Willamette River Greenway provides greater opportunity for public access and enjoyment of the river area than does industrial development.

13. Rural agricultural areas along river and waterway corridors can be damaged by isolated public access points because of vandalism and/or trespass on private lands.

14. Experience in other communities indicates that carefully planned and designed residential and commercial development at designated locations along inland water corridors can be compatible with adjacent areas and the corridors themselves.

15. The current unpleasant and unsightly condition of many inland waterway systems results from neglect and uncoordinated waterway planning.

Objectives

1. Encourage use of river and waterway corridors to fulfill open space, recreation, and resource protection needs.

2. Ensure that development occurring within river and waterway corridors is responsive to and provides protection of these valuable natural assets.

3. Encourage, where appropriate and in keeping with Greenway goals, development that respects the quality of rivers and waterways and provides a variety of opportunities for enjoyment of those resources by the public.

4. Encourage coordinated water planning and the development of the area's waterways, where appropriate, as part of the area's open space and park system.

Policies

D.1 Periodically, local governments shall review Greenway boundaries, uses, and potential acquisition areas to ensure continued compliance with state and local Greenway goals.

D.2 Land use regulations and acquisition programs along river corridors and waterways shall take into account all the concerns and needs of the community, including recreation, resource, and wildlife protection; enhancement of river corridor and waterway environments; potential for supporting non-automobile transportation; opportunities for residential development; and other compatible uses.

D.3 Eugene, Springfield, and Lane County shall continue to cooperate in expanding water-related parks and other facilities, where appropriate, that allow access to and enjoyment of river and waterway corridors.

D.4 Lane County, Springfield, and Eugene shall continue to participate in efforts to determine the feasibility of an urban canal that would connect Eugene's historic Millrace to Amazon Creek. Likewise, Springfield's efforts to improve the scenic quality of its Millrace should be encouraged.

D.5 New development that locates along river corridors and waterways shall be limited to uses that are compatible with the natural, scenic, and environmental qualities of those water features.

D.6 New industrial development that locates along the Willamette and McKenzie Rivers shall enhance natural, scenic, and environmental qualities.

D.7 Potential public access points in rural agricultural areas shall be carefully reviewed to ensure preservation of the Willamette River Greenway environment, with special emphasis on problems of vandalism and trespass.

D.8 Within the framework of mandatory statewide planning goals, local Willamette River Greenway plans shall allow a variety of means for public enjoyment of the river, including public acquisition areas, residential areas, and commercial areas.

D.9 Local and state governments shall continue to provide adequate public access to the Willamette River Greenway.

D.10 Aggregate extraction may be permitted when compatible with purposes of Statewide Planning Goal 15. Local governments shall continue, through land use planning and special regulations, to control aggregate extraction to minimize adverse effects of extraction on water quality, fish and wildlife, vegetation, bank stabilization, stream flow, scenic quality, noise, and safety.

D.11 The taking of an exception shall be required if a non-water-dependent transportation facility requires placing of fill within the Willamette River Greenway setback.

An exception to Statewide Planning Goal 15 Willamette River Greenway was approved for Oregon Department of Transportation (ODOT) for purposes of removing and replacing the decommissioned 1-5 Bridge, the temporary detour bridge and the Canoe Canal bridge with two new parallel bridges (one southbound and one northbound) within the 1-5 right-of-way crossing the Willamette River and Canoe Canal and within the Willamette River Greenway Setback Line. The exception authorizes construction and later removal of one or more temporary work bridges; demolition of the decommissioned 1-5 Willamette River Bridge, Canoe Canal Bridge, and detour bridges; construction of the two replacement bridges; reconstruction of the roadway approaches to the bridges (1-5 and ramps); rehabilitation of the project area; and completion of any required mitigation of project impacts. In association with these tasks, the exception further authorizes within the Willamette River Greenway Setback Line the addition and removal of fill within ODOT right-of-way and the removal of fill within a temporary slope easement east of 1-5. This exception satisfies the criteria of Oregon Administrative Rule (OAR) 660-004-0022(6) Willamette Greenway and the exception requirements of OAR 660-004-0020 Goal 2, Part II (c) for a "reasons" exception, and pursuant to OAR 660-004-0015, is hereby adopted as an amendment to the *Metro Plan* text, Policy D.11, Chapter III, Section D.

An exception to Statewide Planning Goal 15 Willamette River Greenway was approved by the cities of Eugene and Springfield and by Lane County authorizing construction of a bike path viaduct beneath the I-5 bridges, along the south bank of the Willamette River. The exception authorizes construction of the bike path viaduct including the fill and removal of fill necessary to build the structure. This exception satisfies the criteria of



NORTHWESTERN & COASTAL OREGON

Record of Decision and Resource Management Plan

The BLM manages more than 245 million acres of public land, the most of any Federal agency. This land, known as the National System of Public Lands, is primarily located in 12 western states, including Alaska. The BLM also administers 700 million acres of sub-surface mineral estate throughout the nation.

The BLM's mission is to manage and conserve the public lands for the use and enjoyment of present and future generations under our mandate of multiple-use and sustained yield. In fiscal year 2013, the BLM generated $4.7 billion in receipts from public lands.

blm.gov/or



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965, Portland, Oregon 97208
http://www.blm.gov/or

Dear Reader:

The Bureau of Land Management (BLM) administers 2.5 million acres of land in western Oregon. These lands play an important role in the region's social, ecological, and economic well-being. As steward of these lands, the BLM has a responsibility to ensure that our management is meeting legal mandates and the needs of local communities.

This document includes both the Record of Decision (ROD) and the Northwestern and Coastal Oregon Resource Management Plan (RMP). The ROD approves the Northwestern and Coastal Oregon RMP, which provides direction for management of resources on approximately 1.3 million acres of BLM-administered lands in the Coos Bay District, Eugene District, Salem District, and the Swiftwater Field Office of the Roseburg District. The BLM has prepared this Northwestern and Coastal Oregon ROD/RMP in coordination with the Southwestern Oregon ROD/RMP, which provides direction for the management of resources on BLM-administered lands in the Medford District, Klamath Falls Field Office of the Lakeview District, and the South River Field Office of the Roseburg District.

The ROD states the decision; explains the rationale for the decision; provides a declaration of the allowable sale quantity of timber; describes how the BLM will transition into the new plan; and outlines mitigation measures, plan monitoring, and plan evaluation. The RMP contains the land use allocations, management objectives and management direction, guidance for use of the RMP, a monitoring plan, and more detailed information on some resource programs.

The completion of these RODs/RMPs marks the end of a four-year effort by the BLM to use new science, policies, and technology to protect natural resources and support local communities in western Oregon. Since 2012, the BLM has held 41 public meetings, workshops, and forums. The BLM received more than 7,000 comments, 4,500 of which were submitted during the formal comment period on the Draft RMP/Environmental Impact Statement. I would like to thank all of you for your participation throughout this planning process. The active involvement of stakeholders—including Federal and State agencies, cooperating agencies, organizations, Indian Tribes, and members of the public—has made our planning effort stronger.

I encourage you to remain involved with BLM's management through engaging with local offices on future projects. On-the-ground projects, such as timber sales, development of recreation opportunities, and restoration projects, will undergo additional analysis and decision-making before implementation. Please contact your local BLM office to learn about how to get involved in projects in your community.

Sincerely,

Ron Dunton
Acting State Director
Oregon/Washington

United States Department of the Interior
Bureau of Land Management

Northwestern and Coastal Oregon Record of Decision and Approved Resource Management Plan

Coos Bay, Eugene, Salem Districts, and Swiftwater Field Office of Roseburg District

August 2016

Table of Contents

RECORD OF DECISION **1**
SUMMARY **1**
PLANNING PROCESS **2**
PLANNING AREA **2**
DECISION **3**
What the ROD and RMP Provide *3*
Mapping of Land Use Allocations 3
Allowable Sale Quantity of Timber 5
What the ROD and RMP Do Not Provide *8*
Existing Decisions 9
Application of the RMP to Existing and New Projects *9*
Projects Decided Prior to the ROD/RMP 10
Projects Begun Prior to the ROD/RMP, but Decided After the ROD/RMP 10
Projects Begun After the ROD/RMP 13
Valid Existing Rights *13*
Changes to the RMP between the Proposed RMP/Final EIS and the ROD *13*
THE PROPOSED RMP AND ALTERNATIVES **16**
The No Action Alternative *16*
The Action Alternatives *16*
Alternative A 16
Alternative B and Sub-Alternative B 17
Alternative C and Sub-Alternative C 17
Alternative D 18
The Proposed RMP *18*
Environmentally Preferable Alternative *19*
RATIONALE FOR THE DECISION **20**
Provide a Sustained Yield of Timber *21*
Conservation and Recovery of Threatened and Endangered Species – Northern Spotted Owl *22*
Conservation and Recovery of Threatened and Endangered Species – Marbled Murrelet *24*
Conservation and Recovery of Threatened and Endangered Fish Species and Provide Clean Water in Watersheds *25*
Restore Fire-adapted Ecosystems *26*
Provide for Recreation Opportunities *26*
Coordinate Management of Lands Surrounding the Coquille Forest with the Coquille Tribe *26*
Carbon Storage *27*
Lands with Wilderness Characteristics *27*
Survey and Manage *28*
Alternatives Considered in the Proposed RMP/Final EIS *28*
MITIGATION **29**
Mitigation Adopted in this Decision *30*
Participate in barred owl management 30
Avoid incidental take of northern spotted owls 30
Mitigation Not Adopted in this Decision *32*
Avoid any increase in particulate emissions 32
Avoid any increase in lands susceptible to peak flow increases 32
Avoid any increase in sediment delivery to streams 32
Avoid any increase in detrimental soil disturbance 33
Protect all northern spotted owl sites 33
Protect all stands 80 years old and older 33
MONITORING AND EVALUATION **33**
PUBLIC INVOLVEMENT **35**
CONSULTATION AND COORDINATION **35**

ESA Consultation *36*
NEW INFORMATION **39**
RECOMMENDATION **42**
CONCURRENCE **42**
APPROVAL **42**
RESOURCE MANAGEMENT PLAN **43**
MANAGEMENT DIRECTION AND OBJECTIVES **47**
MAPPING OF LAND USE ALLOCATIONS **47**
LAND USE ALLOCATIONS **55**
ADMINISTRATIVE ACTIONS **75**
RESOURCE PROGRAMS **76**
APPENDIX A – GUIDANCE FOR USE OF THE RMP **103**
APPENDIX B – MONITORING PLAN **115**
APPENDIX C – BEST MANAGEMENT PRACTICES **139**
APPENDIX D – LANDS AND REALTY **181**
APPENDIX E – ENERGY AND MINERALS **215**
APPENDIX F – AREAS OF CRITICAL ENVIRONMENTAL CONCERN **223**
APPENDIX G – RECREATION MANAGEMENT AREAS **251**
APPENDIX H – PUBLIC MOTORIZED ACCESS **263**
ACRONYMS AND ABBREVIATIONS **287**
GLOSSARY **289**

Table of Figures

Figure 1. *Percent of Riparian Reserve within each subwatershed class for the Northwestern and Coastal Oregon ROD/RMP planning area.* *50*
Figure 2. *Range and management zones for the marbled murrelet.* *53*
Figure 3. *Range of the North Oregon Coast distinct population segment of the Oregon red tree vole north of Highway 20.* *54*

Table of Tables

Table 1. *Land use allocation acres within the Northwestern and Coastal Oregon RMP.* *43*
Table 2. *Snag creation levels within the Harvest Land Base.* *61*
Table 3. *Snag creation levels within the Late-Successional Reserve and Riparian Reserve.* *67*
Table 4. *Down woody material retention levels when implementing fuels reduction or prescribed fire treatments within the Late-Successional Reserve and Riparian Reserve.* *67*
Table 5. *Riparian Reserve distance by water feature.* *70*
Table 6. *Zone-specific management direction for streams in Class I subwatersheds.* *71*
Table 7. *Zone-specific management direction for streams in Class II subwatersheds* *72*
Table 8. *Zone-specific management direction for streams in Class III subwatersheds* *74*
Table 9. *Cultural use allocations with desired outcomes and management actions* *77*
Table 10. *Allotments unavailable for livestock grazing, Coos Bay District.* *84*
Table B-1. *Decade 1 modeled acres by treatment type by Harvest Land Base sub-allocation.* *132*
Table B-2. *Decade 2 modeled acres by treatment type by Harvest Land Base sub-allocation.* *133*
Table B-3. *Marbled murrelet survey reporting.* *136*
Table B-4. *Marbled murrelet occupied site.* *136*
Table B-5. *Marbled murrelet nesting habitat modified or removed without surveys.* *137*
Table B-6. *Survey reporting for the North Oregon Coast DPS of the red tree vole.* *137*

Table C-1. *Best management practices for roads and landings. 143*
Table C-2. *Best management practices for timber harvest activities. 158*
Table C-3. *Soil cover based on erosion hazard ratings. 161*
Table C-4. *Best management practices for planting, pre-commercial thinning, and fertilization. 162*
Table C-5*. Best management practices for fire and fuels management. 162*
Table C-6. *Water bar spacing by gradient and erosion class. 167*
Table C-7. *Best management practices for surface source water for drinking water protection. 168*
Table C-8. *Best management practices for recreation management. 170*
Table C-9. *Best management practices for salable mineral material disposal. 174*
Table C-10. *Best management practices for spill prevention and abatement. 175*
Table C-11. *Best management practices for instream restoration activities. 178*
Table D-1. *Withdrawal tables legend. 186*
Table D-2. *Withdrawals in the Coos Bay District. 187*
Table D-3. *Withdrawals in the Eugene District. 194*
Table D-4. *Withdrawals in the Roseburg District. 198*
Table D-5. *Withdrawals in the Salem District. 202*
Table D-6. *Land Tenure Zone 3 lands in the Coos Bay District. 206*
Table D-7. *Land Tenure Zone 3 lands in the Eugene District. 207*
Table D-8. *Land Tenure Zone 3 lands in the Roseburg District. 208*
Table D-9. *Land Tenure Zone 3 lands in the Salem District. 209*
Table D-10. *Communication sites in the Coos Bay District. 212*
Table D-11. *Communication sites in the Eugene District. 212*
Table D-12. *Communication sites in the Roseburg District. 213*
Table D-13. *Communication sites in the Salem District. 213*
Table F-1. *Special Management Needs for Designated Areas of Critical Environmental Concern within the Coos Bay District in the Northwestern and Coastal Oregon ROD/RMP plan boundary. 225*
Table H-1. *Current authorized motorized and non-motorized trails within the decision area. 271*
Table H-2. *Coos Bay District public motorized access designations 273*
Table H-3. *Eugene District public motorized access designations. 279*
Table H-4. *Roseburg District public motorized access designations. 281*
Table H-5. *Salem District public motorized access designations. 283*

Table of Maps

Map 1. *Planning area for the Northwestern and Coastal Oregon RMP (north half). 44*
Map 1. *Planning area for the Northwestern and Coastal Oregon RMP (south half). 45*
Map 2. *Land use allocations and sub-allocations within the Northwestern and Coastal Oregon RMP (north half). ..48*
Map 2. *Land use allocations and sub-allocations within the Northwestern and Coastal Oregon RMP (south half). ..49*
Map 3. *Three-tier subwatershed class map within the Eugene and Salem Districts within the Northwestern and Coastal Oregon RMP. 51*
Map D-1. *Right-of-way avoidance areas and right-of-way exclusion areas (north half). 182*
Map D-1. *Right-of-way avoidance areas and right-of-way exclusion areas (south half). 183*
Map E-1. *Areas closed to salable mineral material disposal (north half). 216*
Map E-1. *Areas closed to salable mineral material disposal (south half). 217*
Map F-1. *Areas of Critical Environmental Concern within the Coos Bay District in the Northwestern and Coastal Oregon ROD/RMP plan boundary. 224*
Map F-2. *Areas of Critical Environmental Concern within the Eugene District in the Northwestern and Coastal Oregon ROD/RMP plan boundary. 230*
Map F-3. *Areas of Critical Environmental Concern within the Swiftwater Field Office of the Roseburg District in the Northwestern and Coastal Oregon ROD/RMP plan boundary. 237*

Map F-4. *Areas of Critical Environmental Concern within the Salem District in the Northwestern and Coastal Oregon ROD/RMP plan boundary. 239*
Map G-1. *Recreation Management Areas within the Coos Bay District.....253*
Map G-2. *Recreation Management Areas within the Eugene District. 256*
Map G-3. *Recreation Management Areas within the Swiftwater Field Office of the Roseburg District. 258*
Map G-4. *Recreation Management Areas within the Salem District. 261*
Map H-1. *Public motorized access area designations within the Coos Bay District. 264*
Map H-2. *Public motorized access area designations within the Eugene District. 265*
Map H-3. *Public motorized access area designations within the Swiftwater Field Office of the Roseburg District. .266*
Map H-4. *Public motorized access area designations within the Salem District. 267*

Record of Decision

Summary

This Record of Decision (ROD) approves the Bureau of Land Management's (BLM) attached Northwestern and Coastal Oregon Resource Management Plan (RMP). This ROD and RMP provide overall direction for management of all resources on BLM-administered lands in the Coos Bay District, Eugene District, Salem District, and the Swiftwater Field Office of the Roseburg District and revises the 1995 RMPs for the Coos Bay, Eugene, Roseburg, and Salem Districts.[1] The land use allocations, management objectives, and management direction in the attached Northwestern and Coastal Oregon RMP are nearly identical to the Proposed RMP set forth in the Proposed RMP/Final Environmental Impact Statement (EIS) for Western Oregon, with the changes and corrections described in this ROD.

The purpose of the RMP revision includes all of the following purposes:

- Provide a sustained yield of timber.
- Contribute to the conservation and recovery of threatened and endangered species, including—
    - Maintaining a network of large blocks of forest to be managed for late-successional forests; and
    - Maintaining older and more structurally-complex multi-layered conifer forests.
- Provide clean water in watersheds.
- Restore fire-adapted ecosystems.
- Provide recreation opportunities.
- Coordinate management of lands surrounding the Coquille Forest with the Coquille Tribe.

The BLM prepared a single Draft RMP/EIS and a single Proposed RMP/Final EIS that support the RODs for both the Northwestern and Coastal Oregon RMP and the Southwestern Oregon RMP. In the Proposed RMP/Final EIS, the BLM analyzed in detail the Proposed RMP, the No Action alternative, and four action alternatives. The BLM developed the Proposed RMP as a variation on Alternative B, which the BLM identified in the Draft RMP/EIS as the preferred alternative.

The Proposed RMP will best meet the purpose and need for the action in comparison to the alternatives, as demonstrated by the analysis in the Proposed RMP/Final EIS. The Proposed RMP represents the product of close cooperative work with several agency partners, and their support will be integral to the effective implementation of the Proposed RMP. Additionally, the Proposed RMP presents a management approach that is consistent with the current capacity of the BLM for implementation; the BLM can reasonably anticipate having sufficient staff and budget to implement the management actions and achieve the objectives of the Proposed RMP,

[1] The BLM is in the process of consolidating the Eugene District and Salem District into the Northwest Oregon District as a single administrative and operational unit with one District Manager. This consolidation does not alter the decision area as considered in the Proposed RMP/Final EIS or the boundaries of the approved RMP.

because the overall staff and budget needs of the Proposed RMP are not substantially greater than the current BLM staff and budget. The cooperation of agency partners and the alignment of the Proposed RMP with BLM capacity are key to ensuring that the Proposed RMP will have a high degree of predictability about implementation and a high degree of certainty of achieving management objectives.

Planning Process

This ROD and RMP provide overall direction for management of all resources on BLM-administered lands in the Coos Bay District, Eugene District, Salem District, and the Swiftwater Field Office of the Roseburg District and revises the 1995 RMPs for the Coos Bay, Eugene, Roseburg, and Salem Districts (USDI BLM 1995 a, b, c, d). The BLM prepared this RMP revision under the regulations (43 CFR 1600) implementing the Federal Land Policy and Management Act of 1976 (FLPMA; 43 U.S.C. 1701 *et seq.*). The BLM prepared an EIS for this plan in compliance with regulations (40 CFR 1500) implementing the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*). The BLM is making this decision consistent with the decision for the Southwestern Oregon RMP for the Klamath Falls Field Office of the Lakeview District, the Medford District, and the South River Field Office of the Roseburg District, which is supported by the same Proposed RMP/Final EIS.

The 1995 RMPs were developed consistent with the 1994 Northwest Forest Plan, which the Department of the Interior and the Department of Agriculture adopted for Federal forests within the range of the northern spotted owl. This RMP revision revises the 1995 RMPs in their entirety and thereby revises the Northwest Forest Plan for the management of BLM-administered lands in the Coos Bay District, Eugene District, Salem District, and the Swiftwater Field Office of the Roseburg District.

Planning Area

The planning area for the Northwestern and Coastal Oregon RMP includes approximately 1.3 million acres of BLM-administered lands in western Oregon managed by the BLM's Coos Bay District, Eugene District, Salem District, and the Swiftwater Field Office of the Roseburg District (**Map 1**, located in the RMP). Throughout the Draft RMP/EIS and the Proposed RMP/Final EIS, the BLM has used the term 'planning area' to refer to all lands within the geographic boundary of this RMP and the Southwestern Oregon RMP regardless of jurisdiction. However, this ROD only makes decisions on lands that fall under BLM jurisdiction (including mineral estate). The BLM uses the term 'decision area' to refer to the lands within the planning area for which the BLM has authority to make land use and management decisions. In general, the BLM has jurisdiction over all BLM-administered lands (surface and subsurface) and over mineral estate in areas of split estate (i.e., areas where the BLM administers Federal mineral estate, but the surface is not administered by the BLM). This ROD does not apply to the BLM-administered lands in the West Eugene Wetlands in the Eugene District, because those lands have their own independent RMP.

Decision

The BLM hereby approves the Northwestern and Coastal Oregon RMP for the Coos Bay District, Eugene District, Salem District, and the Swiftwater Field Office of the Roseburg District. The attached Northwestern and Coastal Oregon RMP is nearly identical to the Proposed RMP set forth in the Proposed RMP/Final EIS for Western Oregon, with the changes and corrections described below under "Changes to the RMP between the Proposed RMP/Final EIS and the ROD." The attached Northwestern and Coastal Oregon RMP includes land use allocations, management objectives, and management direction, in addition to appendices addressing implementation of actions consistent with the RMP, a monitoring plan, Best Management Practices, land tenure information and land withdrawals, stipulations on leasable fluid mineral exploration and development activity, designated Areas of Critical Environmental Concern, designated Recreation Management Areas, and public motorized access guidelines.

This ROD and RMP are final and effective upon signing of this ROD. The decisions in this RMP will guide future land management actions and subsequent site-specific implementation decisions. The BLM will carry out additional decision-making, including NEPA compliance, Endangered Species Act (ESA; 16 U.S.C. 1531 *et seq.*) consultation, and other consultation, as appropriate, before authorizing any future actions and implementation decisions that result in on-the-ground activities.

What the ROD and RMP Provide

The approved RMP provides overall direction for management of all resources on BLM-administered lands in the decision area. The approved RMP includes the following land use plan decisions:

- Objectives for the management of BLM-administered lands and resources.
- Land use allocations relative to future uses for the purposes of achieving the various objectives.
- Management direction that identifies where future actions may or may not be allowed and what restrictions or requirements may be placed on those future actions to achieve the objectives set for the BLM-administered lands and resources.

Management objectives are descriptions of desired outcomes for BLM-administered lands and resources in an RMP; the resource conditions that the BLM envisions or desires would eventually result from implementation of future actions consistent with the decisions in the RMP. As such, management objectives are not rules, restrictions, or requirements by which the BLM determines which implementation actions to conduct or how to design specific implementation actions.

Mapping of Land Use Allocations

For the location of the Riparian Reserve, the decision requires identification of features on the ground (e.g., a perennial stream) and the allocation of a corresponding width of Riparian Reserve, except for lands, as represented in the BLM spatial database, allocated to Congressionally Reserved Lands and National Landscape Conservation System (National Conservation Lands), District-Designated Reserves, the portions of the Late-Successional

Reserve allocated for current and future occupied marbled murrelet sites and current and future occupied red tree vole habitat areas, as described below, or the portions of the Late-Successional Reserve allocated for structurally-complex forest.

The widths and management direction for the Riparian Reserve vary among three classes of subwatersheds. The mapped location of the subwatershed classes in the BLM spatial database represents the decision, and the maps accompanying the RMP are for illustrative purposes only. In identifying subwatershed classes, the BLM considered the information including critical habitat designations and data on high intrinsic potential streams to indicate the importance of subwatersheds to the conservation and recovery of ESA-listed fish. However, future changes in designated critical habitat or data on high intrinsic potential streams would not alter the identification of subwatershed classes for the purpose of Riparian Reserve design and management direction. Any change to the subwatershed classes would constitute a change to the approved RMP.[2] As noted above, this ROD only makes decisions on lands that fall under BLM jurisdiction; as such, the identification of subwatershed classes within the planning area is only relevant to defining Riparian Reserve widths and management direction for streams and water features on BLM-administered lands within the subwatershed.

Additionally, for some specific stream features in some subwatershed classes, the width of the Riparian Reserve is defined by a distance equivalent to one site-potential tree height. Site-potential tree height is the average maximum height of the tallest dominant trees (200 years or older) for a given site class. The BLM maintains data on site-potential tree height, which varies across the decision area, generally from 140 feet to 240 feet, depending on site productivity. The BLM may update data on site-potential tree height over time. The BLM will delineate the Riparian Reserve on specific stream features based on the BLM data on site-potential tree height current at the time of the decision on a specific implementation action.

The decision requires the future allocation of marbled murrelet occupied stands[3] to the Late-Successional Reserve for occupied sites identified after March 26, 2015[4] as a result of BLM marbled murrelet surveys in (1) all land use allocations within 35 miles of the Pacific Coast, and (2) Late-Successional Reserve and Riparian Reserve between 35–50 miles from the Pacific Coast and outside of exclusion Areas C and D (shown in **Figure 2**, located in the RMP). In addition, this decision requires the future allocation of red tree vole "habitat areas"[5] to the Late-Successional Reserve for occupied sites identified as a result of BLM red tree vole surveys within the range of the North Oregon Coast Distinct Population Segment of the red tree vole north of Highway 20. These future allocations to the Late-Successional Reserve will not require RMP amendment, because they are explicitly required by the management direction of the approved RMP and were anticipated in the analysis for the Proposed RMP/Final EIS. The BLM

[2] If the BLM makes changes to the subwatershed classes that would change the scope of resource uses or change the terms, conditions, and decisions of the approved RMP, the BLM would implement such changes with an RMP amendment (**Appendix A**).
[3] Marbled murrelet occupied stand refers to all forest stands, regardless of age or structure, within ¼ mile (1,320 feet) of the location of marbled murrelet behavior indicating occupancy and not separated from the location of marbled murrelet behavior indicating occupancy by more than 328 feet of non-forest.
[4] In this context, "identified after March 26, 2015," means that BLM survey data for occupied marbled murrelet sites was entered into the BLM corporate database after March 26, 2015.
[5] Red tree vole "habitat areas" are described in the management direction for the approved RMP.

will provide annual reporting of BLM survey results for marbled murrelets and red tree voles (**Appendix B**) and will consider the extent of these future allocations through plan evaluations (**Appendix A**).

For the District-Designated Reserve – Timber Production Capability Classification, the BLM spatial database includes the current mapped location of this allocation.[6] Over time, the BLM will add additional areas to this allocation through updates to the Timber Production Capability Classification system when examinations indicate that an area meets the criteria for reservation. The BLM will also delete areas from this allocation and return the area to the Harvest Land Base through updates to the Timber Production Capability Classification system when examinations indicate that an area does not meet the criteria for reservation. The BLM will implement these additions and deletions to the District-Designated Reserve – Timber Production Capability Classification through plan maintenance, because such changes will represent minor changes based on further refining the decision in the RMP (**Appendix A**).

For all other land use allocations and designations, the mapped location of these allocations and designations in the BLM spatial database represents the decision. The BLM provides the maps accompanying the RMP for illustrative purposes only, as noted on the maps accompanying the RMP.

Allowable Sale Quantity of Timber

The Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act of 1937 (O&C Act; 43 U.S.C. 1181a *et seq*.) provides that the revested O&C lands be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities." The O&C Act goes on to state that "[t]he annual productive capacity for such lands shall be determined and declared … [p]rovided, [t]hat timber from said lands … not less than the annual sustained yield capacity … shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."

The BLM makes this determination of the annual productive capacity (or allowable sale quantity (ASQ))[7] accounting for the requirements of compliance with other laws and with consideration of the objectives, land use allocations, and management direction of the RMP, which affect the amount of timber that each of the sustained yield units can produce. In this ROD, the BLM

[6] Timber Production Capability Classification is a process of partitioning forestland within the sustained yield unit into major classes based on the biological and physical capability of the site to support and produce forest products on a sustained yield basis using operational management practices. Through the Timber Production Capability Classification, the BLM identifies some sites as unsuitable for sustained-yield timber production because of their biological and physical capabilities and, under this RMP, allocates those areas to District-Designated Reserve – Timber Production Capability Classification.

[7] In this ROD, the BLM considers the terms 'annual productive capacity,' 'annual sustained yield capacity,' 'sustained yield capacity,' and 'allowable sale quantity' as synonyms and uses them as such.

declares the ASQ for the sustained-yield units in the decision area, which match the boundaries for the Coos Bay, Eugene, Roseburg, and Salem Districts.[8]

As modified below, the ASQ for sustained-yield timber production for—

- The Coos Bay sustained-yield unit is 12 million board feet (MMbf);
- The Eugene sustained-yield unit is 53 MMbf;
- The Roseburg sustained-yield unit is 32 MMbf;[9] and
- The Salem sustained-yield unit is 65 MMbf.

The ASQ for sustained-yield timber production for each district listed above necessarily includes an amount of variation in the volume of timber that the BLM will offer for sale, to acknowledge the practical difficulties in predicting annual implementation levels, to reflect the foreseeable year-to-year variation in BLM capacity to offer timber volume, and to facilitate sharing of staff and resources among districts. Thus, for purposes of making the declaration of ASQ under the O&C Act, the BLM hereby declares that the ASQ, or volume of timber that the BLM actually can offer for sale from each sustained-yield unit, is the volume figure listed above for each sustained-yield unit with as much as 40 percent variation on an annual basis. Over a decade of implementation, the actual volume of timber that the BLM offers for sale from the Coos Bay, Eugene, and Salem sustained-yield units may each vary by as much as 20 percent from the total of the volume figures listed above summed over the entire decade. Over a decade of implementation, the actual volume of timber that the BLM offers for sale from the Roseburg sustained-yield unit may vary by as much as 30 percent from the volume figure listed above summed over the entire decade. Thus, the declaration of the ASQ for sustained-yield timber production consistent with the O&C Act is to offer for sale timber volumes within the ranges described both annually and decadally. For example, under the declared ASQ for the Salem sustained-yield unit, the BLM will offer for sale between 39 MMbf and 91 MMbf annually, and between 520 MMbf and 780 MMbf decadally. This variation in the volume of timber that the BLM will offer for sale is within the spectrum of alternatives analyzed in the Proposed RMP/Final EIS.

The ASQ volume represents the sustained-yield volume of timber that the BLM can offer for sale from each sustained-yield unit; as such, the BLM offers this sustained-yield volume of timber only from the Harvest Land Base, which has specific objectives for sustained-yield timber production. As discussed in the Proposed RMP/Final EIS, the BLM will also offer timber

[8] The BLM is in the process of consolidating the Eugene District and Salem District into the Northwest Oregon District as a single administrative and operational unit with one District Manager. This consolidation does not alter the boundaries of the Eugene and Salem sustained-yield units.

[9] The BLM declares the ASQ for sustained-yield timber production for the entirety of the Roseburg sustained-yield unit (i.e., the Swiftwater and South River Field Offices collectively). However, this ROD only provides objectives, land use allocations, and management direction for the Swiftwater Field Office of the Roseburg District. The ROD for the Southwestern Oregon RMP provides objectives, land use allocations, and management direction for the South River Field Office of the Roseburg District. The BLM also presents this same declaration that the ASQ range for the entirety of the Roseburg sustained-yield unit is 32 MMbf (with the 40 percent annual variation factor) in the ROD for the Southwestern Oregon RMP. Neither the ROD for the Southwestern Oregon RMP nor the ROD for the Northwestern and Coastal Oregon RMP specify how much of this 32 MMbf (with the 40 percent annual variation factor) will be offered from the South River Field Office or the Swiftwater Field Office individually. The portion of the total ASQ range for the Roseburg sustained-yield unit that will be offered from each of the two field offices in the Roseburg District is at the discretion of the BLM.

volume from the reserve allocations, which do not have objectives for sustained-yield timber production. This timber volume, which is called non-ASQ volume in the Proposed RMP/Final EIS, will not count towards the ASQ volume. Although the Proposed RMP/Final EIS estimated the amount of non-ASQ volume that the BLM is likely to offer from each sustained-yield unit each decade, the BLM does not declare an amount of non-ASQ volume or otherwise commit to producing a specific amount of non-ASQ volume, either annually or decadally. The BLM anticipates offering for sale approximately the amount of non-ASQ timber volume that the Proposed RMP/Final EIS estimated from each sustained-yield unit for each decade. However, this ROD does not set any minimum or maximum amount of non-ASQ volume that the BLM will offer for sale, because this estimated volume represents the by-product of management actions that the BLM will implement in the reserve allocations, which do not have objectives for sustained-yield timber production. The BLM will consider through monitoring and plan evaluation whether the implementation of management actions within the reserve allocations that produce non-ASQ timber volume is consistent with the effects analysis in the Proposed RMP/Final EIS, and whether implementation of actions under the RMP is effectively meeting RMP objectives.

As noted in the Draft RMP/EIS and Proposed RMP/Final EIS, the necessary organization transition from implementing actions consistent with the 1995 RMPs to implementing actions consistent with the new RMP may take time. For the individual sustained-yield units, the difference between the ASQ range declared in this ROD and that declared in the 1995 RMPs is variable: the ASQ range has increased for the Salem and Eugene sustained-yield units and has decreased for the Coos Bay and Roseburg sustained-yield units. The BLM will need time to restructure resources, budget, and staff for full implementation of actions consistent with the approved RMP. In addition, the BLM will need time to realign some timber sales being prepared or already prepared but not offered, in accordance with changing land use allocations and management direction of the RMP, and in accordance with specific restrictions described below under "Projects Begun Prior to the ROD/RMP, but Decided After the ROD/RMP."

Because the BLM is approving this ROD late in fiscal year 2016 and because the BLM has largely completed preparation of timber sales for fiscal year 2016 prior to approving this ROD, the BLM will continue to be guided by the 1995 RMPs in offering volume in fiscal year 2016.

In fiscal years 2017 and 2018, the BLM will strive to offer volume from the Harvest Land Base to achieve the ASQ range, including the 40 percent annual variation factor, declared in this ROD from each sustained-yield unit. However, the opportunities for the BLM to offer timber from the Harvest Land Base during fiscal years 2017 and 2018 are constrained by the following:

- The planning and analysis of timber sales requires several years of preparation before the BLM can design a site-specific project and reach a decision.
- The BLM did not yet know the location of the land use allocations and management direction, or the declared ASQ range for each sustained-yield unit in this approved RMP when the BLM began work on most of the timber sales that could be offered in fiscal years 2017 and 2018.
- The general geographic location of timber sales in development for fiscal years 2017 and 2018 cannot now be changed without otherwise cancelling those sales.

Thus, the BLM does not have time to prepare a full complement of new timber sales for fiscal years 2017 and 2018 from the Harvest Land Base allocated by this ROD. In addition, the need to restructure resources, budget, and staff for full implementation of actions under the approved RMP restricts the ability of the BLM to offer timber sales in fiscal years 2017 and 2018 in some sustained-yield units. As a result, the BLM will likely be unable to offer sufficient volume from the Harvest Land Base in some sustained-yield units to achieve the declared ASQ range including the 40 percent annual variation factor in fiscal years 2017 and 2018.

In fiscal year 2019 and subsequent years, the BLM will offer for sale a volume of timber from the Harvest Land Base within the declared ASQ range including the 40 percent annual variation factor declared in this ROD for each sustained-yield unit. Fiscal year 2019 will be the first year of implementation for the purpose of determining the level of decadal variation around the declared ASQ.

What the ROD and RMP Do Not Provide

The approved RMP does not contain decisions for actions outside the jurisdiction of the BLM, such as decisions for the management on lands not administered by the BLM. The approved RMP does not change the BLM's responsibility to comply with applicable laws and regulations. The approved RMP does not establish or alter BLM national policy. The approved RMP does not directly determine BLM funding or staffing levels.

The approved RMP includes land use plan decisions and does not include any implementation decisions. As described in the FLPMA, land use plans are tools by which "present and future use is projected" (43 U.S.C. 1701(a)(2)). The BLM's planning regulations make clear that land use plans are a preliminary step in the overall process of managing public lands, and are "designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses" (43 CFR 1601.0–2). A land use plan therefore is not ordinarily the medium for affirmative decisions that implement BLM's projections; the FLPMA provides that "[t]he Secretary may issue management decisions to implement land use plans" (43 U.S.C. 1712(e)). In other words, the decisions implementing the direction in a land use plan are distinct from the plan itself. Furthermore, the regulation defining a land use plan declares that a plan "is not a final implementation decision on actions which require further specific plans, process steps, or decisions under specific provisions of law and regulations" (43 CFR 1601.0–5). As such, land use plan decisions (objectives, land use allocations, and management direction) do not directly authorize implementation of on-the-ground projects, which the BLM can carry out only after completion of further NEPA compliance and decision-making processes and consultation as appropriate.[10]

[10] The designations in the approved RMP of areas as *limited* or *closed* for public motorized access are transportation land use plan decisions and not implementation decisions. Land use plan decisions guide future land management actions and provide guidance for subsequent site-specific implementation decisions. Designations of areas as *limited* or *closed* for public motorized access will guide use within these areas until the BLM completes implementation-level travel management planning, consistent with the BLM Travel and Transportation Handbook H-8342 (USDI BLM 2012).

Existing Decisions

The approved RMP does not alter the following existing decisions, which remain valid within the decision area:

- Record of Decision for Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments (USDI BLM 2005a)
- Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western United States (USDA FS and USDI BLM 2008)
- Approved Resource Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-administered lands in the 11 Western States (USDI BLM 2009)
- Vegetation Treatments Using Herbicides on BLM Lands in Oregon Record of Decision (USDI BLM 2010)
- Record of Decision for Management of Port-Orford-cedar in Southwestern Oregon (Coos Bay and Roseburg Districts; USDI BLM 2004)
- Seed Orchard Records of Decision for Integrated Pest Management (Eugene and Salem Districts; USDI BLM 2005b, 2005c)
- North Bank Habitat Management Area and Area of Critical Environmental Concern Record of Decision (Roseburg District; USDI BLM 2001)
- North Umpqua River Management Plan (Roseburg District; USDA FS, USDI BLM, and Oregon State Parks and Recreation Department 1992)
- Molalla River-Table Rock Recreation Area Management Plan (Salem District; USDI BLM 2011)
- Quartzville Creek National Wild and Scenic River Management Plan (Salem District; USDI BLM 1992)
- Salmon National Wild and Scenic River Management Plan (Salem District; USDA FS and USDI BLM 1993a)
- Sandy Wild and Scenic River and State Scenic Waterway Management Plan (Salem District; USDI BLM 1993b)
- Table Rock Wilderness Management Plan (Salem District; USDI BLM 1987)
- Yaquina Head Outstanding Natural Area Management Plan (Salem District; USDI BLM 1983)

The BLM has reviewed these decisions and concluded that these decisions do not conflict with the approved RMP. The BLM will continue to take actions consistent with these existing decisions unless and until the BLM amends, revises, or rescinds these existing decisions in decision-making separate from this approved RMP.

The approved RMP does not alter the West Eugene Wetlands Record of Decision and Resource Management Plan (Eugene District; USDI BLM 2015a). The BLM-administered lands under the West Eugene Wetlands RMP are not within the decision area for this approved RMP.

Application of the RMP to Existing and New Projects

Revision of an RMP necessarily involves a transition from the application of the old RMP to the application of the new RMP. The planning and analysis of future projects such as timber sales requires several years of preparation before the BLM can design a site-specific project and reach

a decision. Allowing for a transition from the old RMP to the new RMP avoids disruption of the management of the BLM-administered lands and allows the BLM to utilize work already begun on the planning and analysis of projects. This section addresses the application of the RMP to three categories of future projects:

1. Projects for which the BLM has signed a project-specific decision prior to the effective date of this ROD.
2. Projects for which the BLM has begun preparation of NEPA documents prior to the effective date of this ROD, but has not yet signed a project-specific decision.
3. Projects for which the BLM has not begun preparation of NEPA documents prior to the effective date of this ROD.

For this discussion, projects are considered to be on-the-ground implementation actions that include but are not limited to timber sales, pre-commercial thinning, fuels reduction (prescribed fire and mechanical treatments), culvert replacements, road renovations, stream restoration, construction of fire breaks, and the granting of rights-of-way. Also for this discussion, a project-specific decision for a timber sale is considered to be signed upon the publication of a notice of sale in a newspaper, consistent with 43 CFR 5003.2.

Projects Decided Prior to the ROD/RMP

This ROD does not affect implementation of projects for which the BLM has signed a project-specific decision prior to the effective date of this ROD. The BLM factored effects of implementation of these projects into the analysis in the Proposed RMP/Final EIS either as an analytical assumption about current land treatment types and levels of activity, or as part of the current condition of the affected environment.

Projects Begun Prior to the ROD/RMP, but Decided After the ROD/RMP

The BLM may implement projects consistent with the management direction of either the 1995 RMP or the approved RMP attached to this ROD, at the discretion of the decision maker, if—

- The BLM had not signed a project-specific decision prior to the effective date of this ROD;
- The BLM began preparation of NEPA documentation prior to the effective date of this ROD; and
- The BLM signs a project-specific decision on the project within 2 years of the effective date of this ROD.

In this context, preparation of NEPA documentation is considered to have begun upon the earliest of one of the following:

- Public notification that the BLM will be preparing a NEPA document.
- Initiation of external scoping.
- Completion of documentation of a Determination of NEPA Adequacy.
- Completion of documentation of a Categorical Exclusion Review.

The BLM may make decisions within this 2-year period of transition to implement such projects described above consistent with the management direction of the 1995 RMP at the discretion of the decision maker, with the exception of any of the following:

- Regeneration harvest[11] within the Late-Successional Reserve allocated by this ROD that is inconsistent with the management direction for the Late-Successional Reserve contained within the approved RMP.
- Issuance of right-of-way grants within the Late-Successional Reserve allocated by this ROD that are inconsistent with the management direction for the Late-Successional Reserve contained within the approved RMP.
- Commercial thinning within the inner zone of the Riparian Reserve allocated by this ROD that is inconsistent with the management direction for the Riparian Reserve contained within the approved RMP.
- Projects within the District-Designated Reserve – Lands Managed for their Wilderness Characteristics allocated by this ROD that are inconsistent with the management direction for the District-Designated Reserve – Lands Managed for their Wilderness Characteristics contained within the approved RMP.
- Timber harvest that would cause the incidental take of northern spotted owl territorial pairs or resident singles and does not have a signed Biological Opinion and Incidental Take Statement that predates the effective date of the Biological Opinion for the approved RMP.

If the decision maker elects to implement such projects consistent with the management direction in the 1995 RMPs (that do not involve any of the five exceptions described above), such projects may include features not consistent with the management direction in the approved RMP attached to this ROD. However, any difference in the specific effects resulting from implementation of timber sales and other projects not consistent with the management direction in the approved RMP would not alter the analysis of effects in the Proposed RMP/Final EIS because of the limited geographic extent of such projects. Additionally, implementation of such projects would not alter the analysis of effects in the Proposed RMP/Final EIS because of the limited difference between projects prepared in conformance with the 1995 RMPs and projects prepared in conformance with the approved RMP.

As detailed in the Forest Management section of Chapter 3 of the Proposed RMP/Final EIS, the average total timber harvest acreage under the No Action alternative (i.e., implementation of the 1995 RMPs) would have been 15,704 acres per year within the decision area; under the approved RMPs, the BLM estimates the average total timber harvest acreage will be 15,563 acres per year. Given that the vegetation modeling provided outputs based on 10-year increments, and given the likely year-to-year variability in timber harvest acreage, this difference of less than 1 percent in the average timber harvest acreage over this 2-year transition period would not result in any measurable or meaningful difference in the effects described in the Proposed RMP/Final EIS.

The primary inconsistency with the approved RMP that is likely to occur in these projects is the lower amount of green tree retention in regeneration harvests in areas that were General Forest Management Area under the 1995 RMPs but are allocated to Low Intensity Timber Area in this

[11] The construction of roads or landings does not constitute regeneration harvest.

ROD. There are only 14,918 acres that were General Forest Management Area under the 1995 RMPs but are allocated to Low Intensity Timber Area in these RODs, which constitutes less than 1 percent of the decision area and 3 percent of the total Harvest Land Base allocated in both this ROD and the Southwestern Oregon ROD. Based on the average timber harvest acreage from the vegetation modeling outputs, regeneration harvest in these areas during the 2-year transition period would total approximately 350 acres (out of a total of 6,223 acres of regeneration harvest during this 2-year period) spread over the area of this ROD and the Southwestern Oregon ROD. Furthermore, any difference in green tree retention in regeneration harvests would likely be a small proportion of the total amount of green tree retention. The management direction for the General Forest Management Area in the 1995 RMPs required retention of 6–8 trees per acre, and the approved RMP requires retention of 15–30 percent of the pre-harvest stand basal area in Low Intensity Timber Area. Although 6–8 trees per acre would constitute less than 15–30 percent of the pre-harvest stand basal area under most stand conditions, the requirements of these differing measures would overlap in some stand conditions. The amount of green tree retention in regeneration harvests would result in inconsistencies between projects implemented consistent with the 1995 RMPs and projects implemented consistent with the approved RMP that would result in greater environmental effects than projects consistent with the approved RMP. This inconsistency would not result in any measurable or meaningful difference in the effects described in the Proposed RMP/Final EIS because of the small difference in green tree retention levels and the relatively small acreage that would be affected.

Road and landing construction within the Late-Successional Reserve allocated by this ROD for projects prepared consistent with the management direction of the 1995 RMPs could potentially result in adverse effects greater than if such projects were prepared consistent with the management direction of this approved RMP. In most cases, road and landing construction would be consistent with both the management direction of the 1995 RMPs and this approved RMP. Road and landing construction would be most likely to be inconsistent with the management direction of this approved RMP where projects are prepared in areas that had been within the Matrix land use allocation under the 1995 RMPs and are allocated to Late-Successional Reserve by this ROD. It is not possible to characterize precisely the acres that would be affected, because the determination of whether road and landing construction would be consistent with the management direction of this approved RMP depends on road-specific and site-specific information that is not yet available. Nevertheless, road and landing construction within the Late-Successional Reserve that is not consistent with the management direction in the approved RMP would not alter the analysis of effects in the Proposed RMP/Final EIS because of the limited geographic extent of such projects. The BLM anticipates that the total acreage of road and landing construction that could potentially be inconsistent with the management direction in the Late-Successional Reserve during the 2-year transition period would total approximately 30 acres across the decision area of the Northwestern and Coastal Oregon ROD.

Thus, while the inconsistencies related to regeneration harvests and road construction in projects implemented consistent with the 1995 RMPs could result in greater environmental effects than projects consistent with the approved RMP, even these inconsistencies would not result in any measurable or meaningful difference in the effects described in the Proposed RMP/Final EIS.

Projects Begun After the ROD/RMP

Projects for which the BLM begins preparation of NEPA documentation after the effective date of this ROD or for which the BLM signs a decision more than 2 years after the effective date of this ROD must be consistent with the management direction in the approved RMP.

Valid Existing Rights

Other Federal, State, or local government agencies, Tribes, private individuals, or companies may hold valid existing rights within the decision area. Considering the intermingled nature of the BLM-administered lands in the planning area, the BLM has granted many rights-of-way, leases, permits, and other established legal rights within the decision area over the years. Valid existing rights may pertain to timber sale contracts, mining claims, mineral or energy leases, leases, easements, permits, rights-of-way, and water rights. Perhaps the most extensive and unique rights are the reciprocal rights-of-way agreements with dozens of adjacent landowners established to provide for the logical, effective, and efficient development of access on the intermingled lands.

The decisions in the approved RMP do not alter or extinguish valid existing rights on BLM-administered lands. Valid existing rights take precedence over the decisions in the approved RMP. Authorization for implementing an action that would affect these valid existing rights may be subject to approval by the holders of valid existing rights and may not be discretionary to BLM. While the BLM may have authority to implement conditions for approval of actions implemented consistent with the approved RMP, any conditions would have to be consistent with the valid existing rights already granted or otherwise obtained. If authorizations pursuant to valid existing rights come up for review and can be modified by the BLM, the BLM will bring these authorizations into conformance with the approved RMP.

The decisions in the approved RMP describe procedural steps that are relevant to some valid existing rights, but do not alter or extinguish the valid existing rights. For example, the management direction in the approved RMP describes circumstances under which a Plan of Operations will be required for mining activities; such descriptions of procedural steps do not alter or extinguish any valid existing mining claims.

Changes to the RMP between the Proposed RMP/Final EIS and the ROD

For the management direction in the approved RMP, the BLM has reworded some management direction from **Appendix B** of the Proposed RMP/Final EIS to provide greater clarity and consistency and to correct typographical errors. These changes to the management direction do not substantively alter the meaning of the management direction and thus do not substantively alter the analytical conclusions in the Proposed RMP/Final EIS.

The BLM has updated data from the Proposed RMP/Final EIS on the mapping of land use allocations of the approved RMP, which has resulted in changes in the acreages of the land use allocations.[12] These changes in acreage result primarily from the following sources:

- For the approved RMP, the BLM has mapped land use allocations without projecting predicted marbled murrelet sites or predicted red tree vole sites described in the Proposed RMP/Final EIS. The BLM included estimates of these predicted sites in the acreage of land use allocations in the Proposed RMP/Final EIS based on analytical assumptions. While this ROD requires the future allocation of marbled murrelet occupied stands and red tree vole "habitat areas" to the Late-Successional Reserve for occupied sites under the circumstances described in the Decision section above, the BLM will allocate such sites to the Late-Successional Reserve only when the BLM has discovered such sites.
- The BLM has grouped Areas of Critical Environmental Concern that do not overlap the Harvest Land Base with District-Designated Reserves in the approved RMP.
- The BLM has corrected the grouping of land use allocations for the Proposed RMP/Final EIS that included Wilderness Study Areas and Suitable Wild and Scenic Rivers as District-Designated Reserves. These lands are properly grouped with Congressionally Reserved and National Conservation Lands in the approved RMP.
- For the mapping of the land use allocations for the approved RMP, the BLM has reordered the hierarchy of the following land use allocations from the mapping of land use allocations for analysis in the Proposed RMP/Final EIS:
    - The BLM has moved the inner zone of the Riparian Reserve to below the portions of the Late-Successional Reserve that are occupied marbled murrelet sites, occupied red tree vole sites, or structurally-complex forest. The BLM made this change to keep all portions of the Riparian Reserve together in the hierarchy to provide consistent management, and to ensure that occupied marbled murrelet sites, occupied red tree vole sites, or structurally-complex forest are managed consistent with Late-Successional Reserve management direction.
    - The BLM has moved areas delineating water surfaces (e.g., lakes, reservoirs, ponds) to be mapped with District-Designated Reserves that delineate non-forested areas. This District-Designated Reserve land use allocation is above the Late-Successional Reserve and the Riparian Reserve. The BLM has made this change so that areas of water surface are not grouped with forested or vegetated areas in future analysis or monitoring.
    - The BLM has mapped land use allocations with Congressionally Reserved Lands and National Conservation Lands at the top of the hierarchy to ensure that lands with multiple designations that included a national or congressional designation are managed under the most protective land use allocation associated to those acres. As such, not all lands within identified lands with wilderness characteristic units are allocated to the land use allocation of District-Designated Reserves – Lands Managed for their Wilderness Characteristics. Specifically, the identified lands with wilderness characteristics unit known as Salmon Huckleberry

[12] The BLM continually conducts new surveys in the course of implementing actions consistent with the RMP, which may improve the accuracy of geospatial information in the BLM spatial database. Survey data may result in slight changes in the geospatial representation of ownership boundaries, which may result in shifting of boundaries for some land use allocations or special areas to realign with the ownership information. The BLM will update the spatial database over time to reflect this improved survey data as part of plan maintenance (**Appendix A**).

Additions–Salmon River is entirely allocated to the land use allocation of Congressionally Reserved Lands and National Conservation Lands because of the overlapping designated Wild and Scenic Rivers within the unit boundary.

- The BLM has corrected errors in mapping of public motorized access designations, which resulted in errors of reported acres of areas designated as *limited* and *closed* within the planning area. The corrected acres for each district are identified in **Appendix H** of the attached approved RMP.
- The BLM removed the land use allocations for five parcels totaling 488 acres in the Coos Bay District, because Coos County has authority for surface management of these parcels (16 U.S.C. 405).
- The BLM has disposed of parcels totaling 94 acres in the Salem District. The BLM has removed these lands from the base ownership data and removed the corresponding land use allocations in the BLM spatial database.
- The BLM has acquired parcels totaling 86 acres in the Coos Bay District and has assigned these acres to land use allocations consistent with the purpose for which they were acquired.
- The BLM has acquired parcels totaling 399 acres in the Salem District and has assigned these acres to land use allocations consistent with the purpose for which they were acquired.
- The BLM has corrected an omission of the existing Molalla Rifle Club Lease Extensive Recreation Management Area, a 40-acre county lease recreation site in the Salem District.

The BLM has made these changes to correct errors and provide clarifications of the land use allocations, management objectives, and management direction of the approved RMP.

The BLM has added specific fisheries reporting items to the monitoring plan in **Appendix B** of the approved RMP to reflect the terms and conditions of the incidental take statements included in the biological opinions from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service.

The BLM has identified errors in Table 3-53 of the Proposed RMP/Final EIS in the calculation of percent timber inventory change between 2013 and 2113 for the Proposed RMP (USDI BLM 2016, p. 336). The correct values are 94 percent for the reserves, 40 percent for the Harvest Land Base, and 84 percent overall. The Proposed RMP/Final EIS correctly presented the underlying inventory data in Figure 3-63, which displayed the same inventory change in billion board feet of timber (USDI BLM 2016, p. 335). The error in Proposed RMP/Final EIS is limited to the calculation of the percent change in inventory for the Proposed RMP; this limited error does not reflect errors in the underlying analysis and did not lead to errors in any analytical conclusions.

The changes and corrections noted above do not substantially change the analytical conclusions described in the Proposed RMP/Final EIS. Therefore, the BLM concludes that preparation of a supplemental EIS in not required.

The Proposed RMP and Alternatives

The BLM designed the range of alternatives to span the full spectrum of alternatives that would respond to the purpose and need for the action. The BLM developed the alternatives to represent a range of overall management approaches, rather than exemplify gradations in design features. In the Proposed RMP/Final EIS, the BLM analyzed in detail the Proposed RMP, the No Action alternative, and four action alternatives. In addition, the BLM analyzed how two sub-alternatives, which modify an individual component of northern spotted owl conservation in an alternative, would alter effects on timber production and northern spotted owls. The Proposed RMP/Final EIS also discussed several alternatives that the BLM considered but did not analyze in detail.

The BLM developed the alternatives in a single Draft RMP/EIS and a single Proposed RMP/Final EIS that support the RODs for both the Northwestern and Coastal Oregon RMP and the Southwestern Oregon RMP. As such, the alternatives summarized here and the rationale for selection presented below address elements that have little or no direct applicability to this RMP (e.g., Uneven-aged Timber Area, Eastside Management Area). The BLM intends these consistent decisions for the Northwestern and Coastal Oregon RMP and Southwestern Oregon RMP to provide for coordinated management of BLM-administered lands across western Oregon.

The No Action Alternative

The No Action alternative is implementation of the 1995 RMPs as written (in contrast to the BLM's current implementation practices under the 1995 RMPs). Implementation of the timber management program has departed substantially from the outcomes predicted in the 1995 RMPs, and continuing to harvest timber at the declared ASQ level for multiple decades into the future would not be possible using the current practices. Additionally, the land use allocations and management direction of the No Action alternative do not address the Revised Recovery Plan for the Northern Spotted Owl (owl recovery plan; USDI FWS 2011), the new designation of critical habitat for the northern spotted owl, or the new scientific information on the northern spotted owl, including the effects of land management on northern spotted owl habitat, demographic studies, and analyses of the effects of barred owls on northern spotted owls.

The Action Alternatives

The action alternatives include the following land use allocations: Congressionally Reserved Lands, District-Designated Reserves, Late-Successional Reserve, Riparian Reserve, Harvest Land Base, and Eastside Management Area. The location and acreage of these allocations, with the exception of Congressionally Reserved Lands, vary by alternative. Within each action alternative, the Harvest Land Base, Late-Successional Reserve, and Riparian Reserve have specific sub-allocations with differing management direction.

Alternative A

Alternative A has a Late-Successional Reserve larger than the No Action alternative. The Harvest Land Base is comprised of the Uneven-Aged Timber Area and the High Intensity Timber Area. The High Intensity Timber Area includes regeneration harvest with no retention (i.e., clear cuts).

Alternative A includes designation of Special Recreation Management Areas where developed recreation sites or facilities currently exist. In the rest of the decision area, the BLM would not manage specifically for recreation, but recreation could occur to the extent that the BLM has legal public access and recreation is not in conflict with the primary uses of these lands.

Alternative A includes management for wilderness characteristics of all identified lands with wilderness characteristics that are not within the Harvest Land Base.

Alternative A does not include treatment of sudden oak death infection sites.

Alternative B and Sub-Alternative B

In the Draft RMP/EIS, the BLM identified Alternative B as the preferred alternative.

Alternative B has a Late-Successional Reserve similar in size to Alternative A, though of a different spatial design. The Harvest Land Base is comprised of the Uneven-Aged Timber Area, Low Intensity Timber Area, and Moderate Intensity Timber Area. The portion of the Harvest Land Base in Uneven-Aged Timber Area is the largest of all action alternatives. The Low Intensity Timber Area and Moderate Intensity Timber Area include regeneration harvest with varying levels of retention.

Alternative B includes designation of Special Recreation Management Areas at currently developed recreation facilities, and on lands where there are both unique recreation opportunities and where designation would not conflict with sustained-yield timber harvest. Alternative B includes designation of Extensive Recreation Management Areas where the BLM has developed and currently manages recreation activities outside of developed facilities, primarily where the BLM has authorized motorized and non-motorized trails, and where the BLM currently manages dispersed recreation activities.

Alternative B includes management for wilderness characteristics of all identified lands with wilderness characteristics that are outside of the Harvest Land Base, and where they are within compatible existing and potential Recreation Management Areas.

Alternative B includes treatment at all sudden oak death infection sites outside of the Riparian Reserve and no treatment at infection sites in the Riparian Reserve.

Sub-Alternative B is identical to Alternative B, except that it includes protection of habitat within the home ranges of all northern spotted owl known and historic sites.

Alternative C and Sub-Alternative C

Alternative C has the largest Harvest Land Base of any of the alternatives. The Harvest Land Base is comprised of the Uneven-Aged Timber Area and the High Intensity Timber Area. The High Intensity Timber Area includes regeneration harvest with no retention (i.e., clear cuts). Alternative C has the smallest acreage in the Riparian Reserve of all of the alternatives.

Alternative C includes designation of Special Recreation Management Areas at currently developed recreation facilities, and on lands where designation does not conflict with sustained-yield timber harvest. Alternative C includes designation of Extensive Recreation Management Areas where the BLM has developed and currently manages recreation activities outside of developed facilities, primarily where the BLM has authorized motorized and non-motorized trails, and where the BLM currently manages dispersed recreation activities. In addition, the BLM would designate Special Recreation Management Areas and Extensive Recreation Management Areas to address specific recreation demand and scarcity.

Alternative C includes management for wilderness characteristics of identified lands with wilderness characteristics that are not within the Harvest Land Base, and where they are within compatible existing and potential Recreation Management Areas.

Alternative C includes treatment at all sudden oak death infection sites.

Sub-Alternative C is identical to Alternative C, except that the Late-Successional Reserve includes all stands 80 years old and older.

Alternative D

Alternative D has the smallest Late-Successional Reserve of any of the action alternatives. The Harvest Land Base is comprised of the Uneven-Aged Timber Area, Owl Habitat Timber Area, and Moderate Intensity Timber Area. The Owl Habitat Timber Area includes timber harvest applied in a manner that would maintain northern spotted owl habitat. The Moderate Intensity Timber Area includes regeneration harvest with retention. Alternative D has the largest acreage in the Riparian Reserve of all of the action alternatives.

Alternative D includes designation of Special Recreation Management Areas at currently developed recreation facilities, and on lands where designation does not conflict with sustained-yield timber harvest. Alternative D would include designation of Extensive Recreation Management Areas on all lands within the decision area where existing recreation use is occurring and the BLM has legal public access. In addition, the BLM would designate Special and Extensive Recreation Management Areas where known historic recreation use has occurred, and where the BLM is seeking to address activity-specific demands. The BLM would designate these to the maximum extent possible without precluding sustained-yield timber harvest.

Alternative D would not include the management for wilderness characteristics of any identified lands with wilderness characteristics.

Alternative D includes treatment at all sudden oak death infection sites.

The Proposed RMP

The BLM developed the Proposed RMP as a variation on Alternative B, which the BLM identified in the Draft RMP/EIS as the preferred alternative. The Proposed RMP has a Late-Successional Reserve that is a refinement of the Late-Successional Reserve design in Alternative B. The Harvest Land Base is comprised of the Uneven-Aged Timber Area, Low Intensity Timber

Area, and Moderate Intensity Timber Area, as in Alternative B. The geographic extent of the portion of the Harvest Land Base in Uneven-Aged Timber Area in the Proposed RMP is intermediate between Alternative B and Alternative C. As in Alternative B, the Low Intensity Timber Area and Moderate Intensity Timber Area include regeneration harvest with varying levels of retention.

Under the Proposed RMP, the BLM will prohibit the incidental take of northern spotted owls from timber harvest until implementation of a barred owl management program has begun. In addition, under the Proposed RMP the BLM would participate in, cooperate with, and provide support for an interagency program for barred owl management when the U.S. Fish and Wildlife Service determines the best manner in which barred owl management can contribute to the recovery of the northern spotted owl (see the Mitigation Adopted in this Decision section below).

To reduce the risk of adverse effects to ESA-listed fish and water quality compared to Alternative B, the Proposed RMP includes a Riparian Reserve design that is intermediate among the alternatives and incorporates elements of each of the alternatives. The Proposed RMP includes a riparian management strategy that carries forward the concept of key watersheds from the No Action alternative, in that it varies riparian management based on the importance of the subwatershed to the conservation and recovery of ESA-listed fish. For fish-bearing streams and perennial streams in all subwatersheds, the Riparian Reserve design is similar to Alternative D. For non-fish-bearing intermittent streams, the Riparian Reserve design in Class I and II subwatersheds is a slight modification of Alternative A, and the Riparian Reserve design in Class III subwatersheds is similar to Alternative C.

To increase protection of unique recreation settings and increase recreation use compared to Alternative B, the Proposed RMP includes an approach to the management of recreation resources modified from Alternative C.

To increase protection of identified lands with wilderness characteristics compared to Alternative B, the Proposed RMP includes the approach to the management of identified lands with wilderness characteristics from Alternative A.

To minimize the spread of sudden oak death compared to Alternative B, the Proposed RMP includes the sudden oak death treatment approach of the No Action alternative, Alternative C, and Alternative D.

Environmentally Preferable Alternative

The Council on Environmental Quality regulations require that a ROD state which alternative is considered to be "environmentally preferable" (40 CFR 1505.2(b)). The Council of Environmental Quality has stated, "The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural and natural resources" (Question 6a, Council on Environmental Quality, Forty Most Asked Questions Concerning CEQ's NEPA Regulations, March 23, 1981).

The effects of the alternatives at the scale of the planning area over the time frames analyzed in the Proposed RMP/Final EIS are complex and difficult to summarize into a single statement of environmental preference. None of the alternatives would have the same relative effect on all resources. That is, none of the alternatives would cause the least damage to every aspect of the biological and physical environment. For most resources, Alternative D would result in the least damage to the biological and physical environment. Although Alternative A would result in the fewest acres of timber harvest, much of that harvest would have a high intensity of effects on the acres harvested. Alternative D would result in more acres of timber harvest than Alternative A, but with less intense harvesting practices, and would result in the fewest miles of new road construction. Alternative D would result in the least amount of sediment delivery to streams, the least acres of detrimental soil disturbance, the least greenhouse gas emissions, and the most carbon storage over time. However, Alternative D would allocate the smallest Late-Successional Reserve of any of the action alternatives. In addition, Alternative D would not include management of wilderness characteristics of any identified lands with wilderness characteristics, in contrast to all of the action alternatives. Nevertheless, Alternative D overall represents the environmentally preferable alternative, as described in the Council on Environmental Quality regulations, because it would result in the least damage to the biological and physical environment for more resources than any of the other alternatives or the Proposed RMP.

Rationale for the Decision

In reaching this decision, the BLM considered how well the Proposed RMP and alternatives would meet the purpose and need for action and evaluated the effects of the Proposed RMP and alternatives, based on the analysis in the Proposed RMP/Final EIS. Because the BLM is making this decision consistent with the decision for the Southwestern Oregon RMP, this rationale addresses purposes and effects across the entire area addressed in the Proposed RMP/Final EIS, including those purposes and effects that have limited or no direct relevance for the Northwestern and Coastal Oregon RMP.

The BLM conducted plan evaluations, which concluded that a plan revision is needed to address the changed circumstances and new information that has led to a substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs. Moreover, the BLM needs to revise existing plans to replace the 1995 RMPs' land use allocations and management direction because of new scientific information and policies related to the northern spotted owl.

The purpose of the RMP revision includes all of the following purposes:

- Provide a sustained yield of timber.
- Contribute to the conservation and recovery of threatened and endangered species, including—
    - Maintaining a network of large blocks of forest to be managed for late-successional forests; and
    - Maintaining older and more structurally-complex multi-layered conifer forests.
- Provide clean water in watersheds.
- Restore fire-adapted ecosystems.
- Provide recreation opportunities.

- Coordinate management of lands surrounding the Coquille Forest with the Coquille Tribe.

Additionally, the BLM provided guidance for the development of action alternatives that described components that the action alternatives must include and provided guidance for conducting the analysis. Elements of this guidance that are particularly relevant for evaluating the Proposed RMP and alternatives in reaching this decision include—

- Providing a high degree of predictability and consistency about implementing land management actions and a high degree of certainty of achieving management objectives (desired outcomes), especially those outcomes related to discrete statutory mandates; and
- Simplifying implementation of management actions and reducing the costs of implementation.

The Proposed RMP will best meet the purpose and need for the action in comparison to the alternatives, as demonstrated by the analysis in the Proposed RMP/Final EIS. The Proposed RMP is also more responsive than the alternatives to the BLM guidance for the development of action alternatives to—

- Provide a high degree of predictability and consistency about implementing land management actions;
- Provide a high degree of certainty of achieving management objectives;
- Simplify implementation of management actions; and
- Reduce the costs of implementation.

The Proposed RMP represents the product of close cooperative work with several agency partners, and their support will be integral to the effective implementation of the Proposed RMP. The Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service have worked particularly closely with the BLM in developing the Proposed RMP and have voiced support for the Proposed RMP through their respective review and consultation processes.

Additionally, the Proposed RMP presents a management approach that is consistent with the current capacity of the BLM for implementation; the BLM can reasonably anticipate having sufficient staff and budget to implement the management actions and achieve the objectives of the Proposed RMP, because the overall staff and budget needs of the Proposed RMP are not substantially greater than the current BLM staff and budget. The cooperation of agency partners and the alignment of the Proposed RMP with BLM capacity are key to ensuring that the Proposed RMP will have a high degree of predictability about implementation and a high degree of certainty of achieving management objectives.

Provide a Sustained Yield of Timber

The Proposed RMP will provide more sustained-yield timber than the amount declared in the 1995 RMPs and more than the BLM has been able to offer for sale in recent years. The sustained-yield timber harvest levels under the Proposed RMP will provide a high degree of predictability and consistency about implementation and a high degree of certainty of achieving the declared sustained-yield timber harvest levels, because the Proposed RMP is generally

consistent with other designations and plans, such as critical habitat designations and recovery plans. This consistency will allow the BLM to implement timber harvest more effectively with agency partners, such as the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

The BLM has declared an ASQ of timber consistent with the O&C Act that includes an amount of variation in the volume of timber that the BLM will offer for sale, both on an annual and decadal basis. The BLM has defined this amount of variation to reflect the foreseeable year-to-year variation in BLM capacity to offer timber volume for sale, based on the empirical evidence of the past two decades. In addition, the BLM has coupled a higher amount of annual variation with a lower amount of decadal variation to facilitate sharing of staff and resources among districts. That is, the BLM may offer less than 100 percent (but at least 60 percent) of the declared ASQ in some sustained-yield units in some individual years (e.g., to shift work to other sustained-yield units in years of large workloads), and offer more than 100 percent (but no more than 140 percent) of the declared ASQ in other individual years, and still provide the approximate amount of ASQ for each sustained-yield unit for the decade as a whole.

The BLM's objective under the O&C Act and this purpose of the RMP revision directly address sustained-yield timber production. However, many important outcomes of the RMP will result from the total amount of timber harvested, including both the sustained-yield timber production from the Harvest Land Base (ASQ volume) and the timber produced as a by-product of habitat restoration in other land use allocations, such as Late-Successional Reserve and Riparian Reserve (non-ASQ volume). These important outcomes include the effects on jobs and payments to counties under the O&C Act. As a result of providing more total timber harvest, the Proposed RMP will result in more jobs than the current implementation. In addition, the Proposed RMP will result in higher payments to counties than the current implementation if payments under the Secure Rural Schools and Community Self-Determination Act (Pub. L. 114-10) are not reauthorized and future payments are based on timber receipts under the O&C Act formula.

The Proposed RMP will provide more sustained-yield timber production than Alternative D, but less than the No Action alternative,[13] and Alternatives A, B, and C. The BLM has less certainty of successfully implementing harvest levels higher than the Proposed RMP, given BLM staffing and budget levels and past experience implementing the 1995 RMPs. Harvest levels higher than the Proposed RMP would require reduced contribution to the conservation and recovery of the northern spotted owl, marbled murrelet, and ESA-listed fish species, and would reduce the increase in carbon storage over time.

Conservation and Recovery of Threatened and Endangered Species – Northern Spotted Owl

The Proposed RMP will contribute to the conservation and recovery of the northern spotted owl better than the alternatives. The Proposed RMP will reserve more acres of Late-Successional Reserve than the No Action alternative and will create large blocks of nesting, roosting, and

[13] As described in the Proposed RMP/Final EIS, the sustained-yield timber production level calculated for the No Action alternative would be higher than the amount declared in the 1995 RMPs because of improvements in data and changes in forest conditions since 1995.

foraging habitat that are capable of supporting clusters of reproducing northern spotted owls, distributed across a variety of ecological conditions and spaced to facilitate northern spotted owl movement between the blocks. The overall reserve network under the Proposed RMP will be larger than under the No Action alternative, and Alternatives B, C, and D.

The Proposed RMP will protect older, more structurally-complex forest, and the approach in the Proposed RMP to identifying older, more structurally-complex forest for protection is consistent with the recommendation of the U.S. Fish and Wildlife Service in their comments on the Draft RMP/EIS. The No Action alternative does not include a specific approach for protection of older, more structurally-complex forest. The approaches in Alternatives A, C, and D to identifying older, more structurally-complex forest for protection are not consistent with the recommendation of the U.S. Fish and Wildlife Service in their comments on the Draft RMP/EIS.

The Proposed RMP will implement timber harvest consistent with the concepts of Ecological Forestry, which incorporate principles of natural forest development, including the role of natural disturbances, in the initiation, development, and maintenance of stands and landscape mosaics. The forest management approach of Alternatives A and C would not be fully consistent with the concepts of Ecological Forestry. The U.S. Fish and Wildlife Service advises the use of Ecological Forestry in the owl recovery plan. Based on the analysis in the Proposed RMP/Final EIS, the forest management in the Proposed RMP will apply the concepts of Ecological Forestry and will be consistent with the owl recovery plan and the designation of critical habitat for the northern spotted owl. Among the Ecological Forestry approaches of the Proposed RMP are—

- Uneven-aged stand management for fire resilience in the dry forest;
- Regeneration harvest with varying levels of retention in the Moderate Intensity Timber Area and Low Intensity Timber Area;
- Protection of larger and older trees within harvested areas;
- Thinning within the Late-Successional Reserve to speed the development of northern spotted owl habitat; and
- Retention of key forest structural components following natural disturbances in the reserves.

The design of the Proposed RMP acknowledges the ecological differences between the moist and dry forest portions of the decision area and tailors the forest management approaches to these different ecological conditions. Finally, the Proposed RMP, through the extensive reserve network and application of Ecological Forestry concepts, will provide flexibility in addressing the uncertainties associated with climate change.

The Proposed RMP will address the effects of barred owls by avoiding the incidental take of northern spotted owls from timber harvest until implementation of a barred owl management program has begun and by participating in a program for barred owl management once the U.S. Fish and Wildlife Service determines the best manner in which barred owl management can contribute to the recovery of the northern spotted owl (see the Mitigation Adopted in this Decision section below). None of the other alternatives would avoid the incidental take of northern spotted owls from timber harvest until implementation of a barred owl management program has begun. As demonstrated by the analysis in the Proposed RMP/Final EIS, addressing

the effects of barred owls is an essential component of contributing to the conservation and recovery of the northern spotted owl.

In their biological opinion on the Proposed RMP, the U.S. Fish and Wildlife Service concluded, "In aggregate, the [Proposed RMP] provides for the net conservation and recovery of the spotted owl on BLM lands over the life of the plan by contributing to barred owl management and by minimizing adverse impacts associated with timber harvest and other activities. The positive contributions of barred owl management offset the adverse impacts of the [Proposed RMP] to spotted owls and enable long-term spotted owl recovery on BLM lands." (USDI FWS 2016, p. 701).

Conservation and Recovery of Threatened and Endangered Species – Marbled Murrelet

The Proposed RMP will effectively contribute to the conservation and recovery of the marbled murrelet. The Proposed RMP will reserve more acres of Late-Successional Reserve than the No Action alternative and will result in a greater increase in the amount of high-quality nesting habitat than any alternative other than Alternative D. The Proposed RMP will protect older, more structurally-complex forest, which approximates high-quality nesting habitat for marbled murrelets, and the approach in the Proposed RMP to identifying older, more structurally-complex forest for protection is consistent with the recommendation of the U.S. Fish and Wildlife Service in their comments on the Draft RMP/EIS. The Proposed RMP will require pre-project surveys for marbled murrelets and protection of occupied sites in Zone 1 (from the coast to approximately 35 miles inland) and in the Late-Successional Reserve and Riparian Reserve in Zone 2 (from the eastern boundary of Zone 1 to approximately 50 miles inland from the coast), but not in the Harvest Land Base in Zone 2. Based on the results of marbled murrelet surveys over the past two decades, the vast majority of marbled murrelet sites in the decision area are within Zone 1. By not requiring protection of occupied sites in the Harvest Land Base in Zone 2, the Proposed RMP will have a minor adverse effect on marbled murrelets, as demonstrated by the analysis in the Proposed RMP/Final EIS, and will allow for management for sustained-yield timber production and simplify implementation and reduce costs associated with surveys in Zone 2. Thus, the marbled murrelet management approach of the Proposed RMP better balances the purpose of contributing to the conservation and recovery of the marbled murrelet with the purpose of providing for a sustained yield of timber than the alternatives.

In their biological opinion on the Proposed RMP, the U.S. Fish and Wildlife Service concluded, "Although there are likely to be some adverse effects to murrelets and murrelet critical habitat in portions of the species' range, the overall outcome of [Proposed RMP] implementation will be the protection of the vast majority of extant murrelet nesting habitat, and a large long-term net increase in total area and amount of murrelet habitat during the life of the plan. This approach builds on and continues the basic approach of the original conservation strategy for the murrelet first articulated in the [Northwest Forest Plan] and the recovery plan." (USDI FWS 2016, p. 426).

Conservation and Recovery of Threatened and Endangered Fish Species and Provide Clean Water in Watersheds

The Proposed RMP will effectively contribute to the conservation and recovery of ESA-listed fish and will provide clean water in watersheds. The BLM developed the riparian management strategy of the Proposed RMP together with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Environmental Protection Agency. The Proposed RMP addresses all four components of the Aquatic Conservation Strategy of the No Action alternative but has modified and updated several components, consistent with the purpose and need and guidance for the development of all action alternatives for this RMP revision and in light of monitoring results and new scientific information.

Although the Riparian Reserve widths on some streams are narrower than under the No Action alternative, the Proposed RMP will provide more aquatic protection and greater predictability and consistency about implementation than the No Action alternative. The Proposed RMP will provide greater protection near streams within the Riparian Reserve than the No Action alternative. Additionally, the Proposed RMP will provide clearer direction than the No Action alternative about where and under what circumstances management actions such as thinning and fuels treatment are appropriate within the Riparian Reserve, and will prohibit other management actions within the Riparian Reserve, such as salvage harvest (except when necessary to protect public safety, or to keep roads and other infrastructure clear of debris).

Only the Proposed RMP will tailor the Riparian Reserve widths and management to the importance of the subwatershed to ESA-listed fish. The No Action alternative included a process for modifying Riparian Reserve widths, but that process proved ineffective. The subwatershed classes delineated in the Proposed RMP identify those areas important to fish conservation and recovery better than the key watersheds under the No Action alternative. None of the action alternatives provides variation in Riparian Reserve widths and management based on the importance of the subwatershed to ESA-listed fish. As a result, the Proposed RMP better balances protecting ESA-listed fish and water quality with other purposes; providing greater protection than the No Action alternative, and Alternatives B and C, while providing protection comparable to Alternatives A and D in subwatersheds important to ESA-listed fish.

The riparian management strategy of the Proposed RMP will minimize the risk of adverse effects to ESA-listed fish and water quality while providing a high degree of predictability and consistency about implementing land management actions and simplifying implementation. Based on the analysis in the Proposed RMP/Final EIS, and the past experience and monitoring results of implementing the 1995 RMPs, the riparian management strategy of the Proposed RMP, which represents an updated version of all four components of the Aquatic Conservation Strategy, will effectively contribute to the conservation and recovery of ESA-listed fish and will provide clean water in watersheds.

In their review of the Proposed RMP/Final EIS, the Environmental Protection Agency expressed their support for the riparian strategy of the Proposed RMP, and stated, “We find this approach to be fully responsive to the identified purpose and need in the FEIS” (EPA, 2016, p. 1).

In their biological opinion on the Proposed RMP, the National Marine Fisheries Service concluded that the Proposed RMP will protect stream shade and keep stream shade reduction to limited occurrences; will result in overall increases in large wood and resilience to fires over the long term which will outweigh the short-term effects of thinning and fuels reduction; and may cause a moderate increase in sedimentation but current and future actions under the Proposed RMP will reduce that potential for sedimentation (USDC NMFS 2016, pp. 241–251). Overall, the National Marine Fisheries Service concluded that the Proposed RMP is consistent with the recovery goals for all of the listed anadromous salmonid fish species (USDC NMFS 2016, pp. 280–309).

Restore Fire-adapted Ecosystems

The Proposed RMP will contribute to restoring fire-adapted ecosystems in the dry forest landscape of southern Oregon by increasing fire resiliency. The Proposed RMP will increase stand-level fire resistance and decrease stand-level fire hazard from current conditions. The Proposed RMP will result in a greater increase in the acreage of High and Mixed fire resistance and a greater decrease in the acreage of High fire hazard than the No Action alternative, Alternative A, or Alternative C. However, as demonstrated by the analysis in the Proposed RMP/Final EIS, the BLM alone has a limited ability to shift overall landscape fire resiliency, and restoration of fire-adapted ecosystems in the dry forest landscape of southern Oregon will depend upon cooperative work with other landowners. The Proposed RMP is consistent with the management strategies of several other landowners in southern Oregon and will facilitate the cooperative work necessary to restore fire-adapted ecosystems. The Proposed RMP will apply an uneven-aged forest management approach in the dry forest and will provide flexibility in stand treatments in the Late-Successional Reserve and Riparian Reserve in dry forests to address fire resiliency, consistent with the concepts of Ecological Forestry, as advised by the U.S. Fish and Wildlife Service in the owl recovery plan. Through these forest management approaches, the Proposed RMP recognizes the unique ecological conditions and management challenges of the dry forest portions of the decision area.

Provide for Recreation Opportunities

The Proposed RMP will increase recreation opportunities by protecting the majority of the existing recreation opportunities and will establish additional recreation management areas to respond to increasing recreation demand. Although the Proposed RMP will increase recreation opportunities more than the No Action alternative and Alternatives A, B, and C, it will not increase recreation opportunities as much as Alternative D. The Proposed RMP will not seek to achieve this maximum level of recreation opportunities because of uncertainty about the BLM staffing and budget capacity to implement the necessary recreation improvements and uncertainty about whether such large increases in recreation opportunities would actually result in concomitant increases in recreation use.

Coordinate Management of Lands Surrounding the Coquille Forest with the Coquille Tribe

Throughout this RMP revision process, the BLM has coordinated the planning for management of the BLM-administered lands surrounding the Coquille Forest and the development of the

Proposed RMP with the Coquille Indian Tribe. In addition to their government-to-government relationship and their role as a formal cooperator, the Coquille Indian Tribe has had a representative on the Westside Steering Committee, which has provided leadership and direction to the RMP revision process. The Coquille Indian Tribe suggested to the BLM a riparian strategy, which the BLM included in Alternative C, and the BLM included aspects of this riparian strategy in the Proposed RMP. The BLM has met with the Coquille Indian Tribe repeatedly throughout the RMP revision process, in one-on-one discussions, in Westside Steering Committee meetings, and in Cooperating Agency Advisory Group meetings.

The Coquille Forest managed by the Coquille Tribe is "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future" per Title V of the Oregon Resource Conservation Act of 1996 (Pub. L. 104-208). This means that the approved RMP that applies to the Coos Bay District also applies to the Coquille Forest in that it establishes the suite of possible management approaches available for the Coquille Forest. For the purposes of interpreting Title V of the Oregon Resource Conservation Act, the management direction described within the approved RMP is synonymous with the "standards and guidelines" referenced in this Act. The approved RMP does not determine which specific land use allocations apply to which specific portions of the Coquille Forest or the rate or extent of timber harvest on the Coquille Forest. The approved RMP identifies subwatershed classes relevant to defining Riparian Reserve widths and management direction; this identification of subwatershed classes applies only to streams and water features on BLM-administered lands and does not determine the specific subwatershed class applicable to streams and water features on the Coquille Forest.

Carbon Storage

The Proposed RMP would provide an increase in the amount of carbon storage over time. While the Proposed RMP, like all alternatives, would result in an increase in greenhouse gas emissions compared to the current emissions, it would result in an increase in the amount of carbon stored greater than the increase in the amount of carbon lost in greenhouse gas emissions. As a result, the BLM-administered lands in the planning area would constitute a substantial and increasingly large net sink of carbon over time.

Lands with Wilderness Characteristics

The Proposed RMP would provide the maximum protection for identified lands with wilderness characteristics within the BLM's legal discretion. Managing the wilderness resource is part of the BLM's multiple use mission under the FLPMA. Lands with wilderness characteristics retain a primeval character, without permanent improvements and generally appear to have been affected primarily by the forces of nature. These lands provide a variety of resource benefits, including wildlife habitat, clean water, and primitive recreation opportunities. The Proposed RMP will protect lands with wilderness characteristics more than the No Action alternative, Alternatives B, C, or D, and to the greatest extent possible without conflict with sustained-yield timber production on O&C lands.

Survey and Manage

The Proposed RMP, like the action alternatives, does not include the Survey and Manage measures of the No Action alternative. The Survey and Manage measures were included in the Northwest Forest Plan to respond to a goal of ensuring viable, well-distributed populations of all species associated with late-successional and old-growth forests. This goal of the Northwest Forest Plan was founded on a U.S. Forest Service organic statute and planning regulation, which did not and do not apply to the BLM, and is not a part of the purpose for this RMP revision. As detailed in the analysis in the Proposed RMP/Final EIS, the Proposed RMP will allocate a larger Late-Successional Reserve network than the No Action alternative, will protect older and more structurally-complex forests, and will continue to provide management for many of the formerly Survey and Manage species as Bureau Sensitive species. The Proposed RMP can achieve the purpose of this RMP revision and respond the BLM's statutory authorities and mandates without the Survey and Manage measures.

Alternatives Considered in the Proposed RMP/Final EIS

The No Action alternative, which is implementation of the 1995 RMPs as written, would not meet the purpose of the action. As described in the need for action, the BLM has not been able to implement the 1995 RMPs to produce the declared sustained yield of timber. As documented in the plan evaluations and detailed in the analysis of the Proposed RMP/Final EIS, the BLM's inability to implement fully the 1995 RMPs is long-standing, and there is no reasonable basis for asserting that the BLM would be better able to implement the 1995 RMPs in the future. As such, the No Action alternative does not represent a plausible management approach, and future full implementation of the 1995 RMPs as written is speculative. Although the analysis in the Proposed RMP/Final EIS concluded that implementation of the No Action alternative would provide more sustained-yield timber harvest than the Proposed RMP, that analytical conclusion depended on the assumption that the BLM would be able to implement fully the timber harvests of the 1995 RMPs, which has not been the experience of the BLM over the past two decades. The No Action alternative would not effectively contribute to the conservation and recovery of the northern spotted owl, because it would not protect older, more structurally-complex forest, would produce less habitat than the Proposed RMP over time, and would not address the effects of the barred owl. In their biological opinion on the Proposed RMP, the U.S. Fish and Wildlife Service stated that they expect "…an overall net improvement in spotted owl populations on BLM lands under the [Proposed RMP] when compared to the future declining status quo under the [Northwest Forest Plan] …" (USDI FWS 2016, p. 5). The No Action alternative would not contribute to restoring fire-adapted ecosystems in the dry forest landscape of southern Oregon, because it would not apply an uneven-aged forest management approach and would provide less improvement in stand-level fire resistance and fire hazard than the Proposed RMP. The No Action alternative would provide fewer recreation opportunities than the Proposed RMP and would not protect any lands with wilderness characteristics.

Alternative A would provide slightly more sustained-yield timber harvest than the Proposed RMP, but would provide less total timber harvest (i.e., ASQ and non-ASQ volume combined) than the Proposed RMP. Furthermore, Alternative A would not be consistent with the concepts of Ecological Forestry and would not be consistent with the owl recovery plan. Alternative A

would result in the loss of more occupied marbled murrelet sites than the Proposed RMP. Alternative A would provide fewer recreation opportunities than the Proposed RMP.

Alternative B would provide slightly more sustained-yield timber harvest than the Proposed RMP, but would pose more risk of adverse effects to ESA-listed fish and water quality than the Proposed RMP. Alternative B would provide fewer recreation opportunities than the Proposed RMP and would protect fewer lands with wilderness characteristics than the Proposed RMP.

Alternative C would provide substantially more sustained-yield timber harvest than the Proposed RMP, but would not be consistent with the concepts of Ecological Forestry and would not be consistent with the owl recovery plan. Alternative C would result in the loss of more occupied marbled murrelet sites than the Proposed RMP. The riparian management strategy of Alternative C would pose more risk of adverse effects to ESA-listed fish and water quality than the Proposed RMP.

Alternative D would provide less sustained-yield timber harvest and substantially less total timber harvest (i.e., ASQ and non-ASQ volume combined) than the Proposed RMP. Alternative D would provide more recreation opportunities than the Proposed RMP, but would not protect any lands with wilderness characteristics.

Mitigation

The Council on Environmental Quality regulations state that mitigation includes avoiding, minimizing, rectifying, reducing, eliminating, or compensating for adverse environmental impacts (40 CFR 1508.20) and that a ROD must state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why not (40 CFR 1505.2(c)). The BLM NEPA Handbook explains that measures or practices should only be termed mitigation measures if they have not been incorporated into the proposed action or alternatives. If they are incorporated into the proposed action or alternatives, they are called design features, not mitigation measures (BLM Handbook 1790-1 – National Environmental Policy Act, p. 61). Most of the measures that would avoid, rectify, or reduce environmental impacts are integral to the design of the alternatives, such as the size, location, and extent of the Late-Successional Reserve, and therefore these design features cannot be addressed as discrete mitigation measures. For these design features of the alternatives, the rationale for the decision above addresses whether these means to avoid or minimize environmental harm have been adopted, and if not, why not.

Best Management Practices (BMPs) are practices that have been determined to be the most effective and practicable in preventing or reducing the amount of pollution generated by diffuse sources to a level compatible with water quality goals (40 CFR 130.2 (m)). The BMPs are measures or practices that would avoid, rectify, or reduce environmental impacts, and are included in the approved RMP. A list of BMPs is attached to the approved RMP and provides a detailed discussion of the role and application of BMPs (**Appendix C**). Project-level planning and analysis will identify the appropriate and applicable BMPs needed to achieve management direction.

The BLM may implement additional site-specific project-level mitigation measures including additional BMPs that are consistent with RMP management direction as determined necessary through site-specific analysis at the time of the project. Such additional site-specific project-level mitigation measures are not specifically listed in the approved RMP. The BLM will not defer or forego timber harvest of stands in the Harvest Land Base for reasons not described in the management direction or in **Appendix A**.

Mitigation Adopted in this Decision

The approved RMP has incorporated the following discrete mitigation measures that were not included in the design of the alternatives.

Participate in barred owl management

When the U.S. Fish and Wildlife Service determines the best manner in which barred owl management can contribute to the recovery of the northern spotted owl, the BLM would participate in, cooperate with, and provide support for an interagency program for barred owl management to implement Recovery Action 30 of the recovery plan. Barred owl management actions on BLM-administered lands within the range of the northern spotted owl could include BLM participation in scheduling, funding, and implementing such actions. These actions would be implemented pursuant to appropriate NEPA analysis and decision-making. The BLM and U.S. Fish and Wildlife Service would develop a monitoring program that would evaluate whether such a barred owl management program is having the biological benefits to the northern spotted owl assumed in the Biological Opinion on the RMP. The BLM and U.S. Fish and Wildlife Service would meet as necessary, at least annually, to review the results of the monitoring program.

Avoid incidental take of northern spotted owls

The BLM will not authorize timber sales that would cause the incidental take[14] of northern spotted owl territorial pairs or resident singles from timber harvest until implementation of a barred owl management program consistent with the assumptions contained in the Biological Opinion on the RMP has begun. Implementation of a barred owl management program includes the existence of a monitoring program that would evaluate whether a barred owl program is having the biological benefits to the northern spotted owl assumed in the Biological Opinion on the RMP.

Whether a specific timber harvest would result in incidental take will be determined on a case-by-case basis. Until implementation of a barred owl management program has begun, the BLM will not authorize any timber harvest that it determines would cause incidental take of northern spotted owls or is determined to cause incidental take through an ESA Section 7 consultation process. The BLM will be authorizing timber harvest that does not result in incidental take of

[14] The ESA defines 'take' as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. 1532(19)). The definition of harm is "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3; *Babbitt v. Sweet Home Chapter of Cmtys. for a Greater Or.*, 515 U.S. 687, 696–700 (1995)).

northern spotted owls (e.g., harvest in unoccupied home ranges or harvest within occupied home ranges that does not constitute incidental take), provided that such harvest otherwise meets BLM's obligations under ESA Section 7.

As part of the process to determine whether a planned timber harvest would result in take of northern spotted owls, the BLM will establish whether the northern spotted owl is actually present in the area that will be affected by the timber harvest using the best available science at that time, such as through pre-project northern spotted owl surveys consistent with the Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls (USDI FWS February 2, 2011; revised January 9, 2012). The U.S. Fish and Wildlife Service has updated the northern spotted owl survey protocol to account for the influence of barred owl and may update it in the future.

If the BLM and the U.S. Fish and Wildlife Service jointly determine that implementation of a barred owl management program has begun, the BLM may proceed with implementation of timber harvest consistent with the ROD/RMP that may include incidental take of northern spotted owl territorial pairs or resident singles. Any proposed timber harvest that may include such incidental take would be implemented only after and consistent with appropriate project-level ESA Section 7 consultation and incidental take statement.

After implementation of a barred owl management program has begun, the BLM and U.S. Fish and Wildlife Service will meet as necessary, at least annually, to review the results of the monitoring program. If the BLM or the U.S. Fish and Wildlife Service concludes that the monitoring program shows that the results of such a barred owl management program are not consistent with the assumptions in its Biological Opinion, the BLM would reinitiate ESA Section 7 consultation on the RMP.

If the BLM or the U.S. Fish and Wildlife Service concludes that implementation of a barred owl management program consistent with the assumptions contained in the Biological Opinion has not begun after 5 years from the effective date of the ROD/RMP, the agencies would meet as necessary, at least annually, and evaluate whether implementation of a barred owl management program consistent with the assumptions of the Biological Opinion is reasonably certain to occur. If both the BLM and the U.S. Fish and Wildlife Service agree that such a barred owl management program is still reasonably certain to occur, the BLM would continue to not authorize timber sales that would cause the incidental take of northern spotted owl territorial pairs or resident singles from timber harvest. If the BLM or the U.S. Fish and Wildlife Service concludes that such a barred owl management program is not reasonably certain to occur, the BLM would reinitiate ESA Section 7 consultation on the RMP.

If implementation of a barred owl management program has not begun after 8 years of the effective date of the ROD/RMP, the BLM would reinitiate ESA Section 7 consultation on the RMP.

If reinitiation of ESA Section 7 consultation on the RMP is triggered for any of the reasons above, the BLM would comply with ESA Section 7(d) and would not authorize timber harvest

that is likely to adversely affect the northern spotted owl or likely to adversely affect its critical habitat until consultation is complete.

Mitigation Not Adopted in this Decision

The BLM has considered the following discrete mitigation measures that were not included in the design of the alternatives, though some were included in sub-alternatives. The approved RMP has not incorporated these measures.

Avoid any increase in particulate emissions

The approved RMP will result in some increase from current levels in particulate emissions from prescribed burning, as would all alternatives. The approved RMP did not include avoiding any increase in particulate emissions, because it would require a substantial decrease in the amount of prescribed burning, which would increase fire hazard and would not meet the purpose of the action to restore fire-adapted ecosystems to increase fire resiliency. A substantial decrease in the amount of prescribed burning would also limit opportunities for managing habitat for ESA-listed and Bureau Sensitive plants.

Avoid any increase in lands susceptible to peak flow increases

The approved RMP will result in some increase in acreage susceptible to peak flow increases in the rain-on-snow dominated hydro-region during the first decade, as would all alternatives. The analysis in the Proposed RMP/Final EIS found that the acreage susceptible to peak flow increases under the approved RMP and all alternatives would comprise less than 1 percent of the land in the Harvest Land Base. This analytical result represents a susceptibility, rather than an effect that is certain to occur. Furthermore, because actions on lands other than BLM-administered lands can affect susceptibility to peak flow increases, the susceptibility to peak flow increases may differ over time from the results in the Proposed RMP/Final EIS if future actions on other lands differ from the analytical assumptions used in the analysis. The approved RMP did not include prohibiting timber harvest in the subwatersheds identified in the Proposed RMP/Final EIS as susceptible to peak flow increases, because it would reduce the amount of sustained-yield timber production and because the effects of timber harvest on peak flow increases are not certain to occur.

Avoid any increase in sediment delivery to streams

The approved RMP will result in some increase in sediment delivery to streams from new road construction, as would all alternatives. The approved RMP did not include prohibiting construction of new roads within the sediment-delivery distance of streams (which the BLM assumed to be 200 feet for the purpose of analysis) to avoid any increase in sediment delivery from current levels, because it would require either a substantial reduction in activities or construction of a substantially greater length of road to avoid the area around streams. A reduction in the amount of timber harvest would reduce the favorable outcomes of the approved RMP for jobs, income, and revenue to counties. Construction of a substantially greater length of road to avoid the area around streams would increase the adverse effects of road construction on

wildlife and plant habitat; would increase the introduction and spread of invasive plant species; and would increase the cost of implementation.

Avoid any increase in detrimental soil disturbance

The approved RMP will result in some increase in detrimental soil disturbance from timber harvest, road construction, and fuels reduction treatments, as would all alternatives. The BLM will be able to reduce the acreage of detrimental soil conditions through sound management practices that would limit initial compaction levels, remove existing or created compacted surfaces, and improve soil water and organic matter levels. However, because the extent and effectiveness of such mitigation or amelioration depends heavily on site-specific and project-specific factors, the BLM cannot quantify those reductions in detrimental soil disturbance at the scale of the RMP. To use RMP decisions to avoid any increase in detrimental soil disturbance would require a substantial reduction in the amount of timber harvest, road construction, and fuels reduction treatments. A reduction in the amount of timber harvest and road construction would reduce the favorable outcomes of the approved RMP for jobs, income, and revenue to counties. A reduction in the amount of fuels reduction treatments would increase fire hazard and would not meet the purpose of the action to restore fire-adapted ecosystems to increase fire resiliency.

Protect all northern spotted owl sites

Sub-alternative B included the protection of habitat within the home ranges of all northern spotted owl known and historic sites that would be within the Harvest Land Base. The approved RMP did not include this protection because it would reduce the sustained-yield production of timber by over 100 MMbf per year, and would not result in substantial improvements in northern spotted owl habitat development or population response. A reduction in the amount of timber harvest would reduce the favorable outcomes of the approved RMP for jobs, income, and revenue to counties.

Protect all stands 80 years old and older

Sub-alternative C included all stands 80 years old and older in the Late-Successional Reserve. The approved RMP did not include this protection because it would reduce the sustained-yield production of timber by over 100 MMbf per year, and would not result in substantial improvements in northern spotted owl habitat development or population response. Specifically, protecting all stands 80 years old and older would not improve the development of a network of large, contiguous blocks of late-successional forest and would not provide any discernible improvement in the population response of the northern spotted owl. A reduction in the amount of timber harvest would reduce the favorable outcomes of the approved RMP for jobs, income, and revenue to counties.

Monitoring and Evaluation

Monitoring provides information to determine whether the BLM is following the RMP management direction (i.e., implementation monitoring) and to verify if the implementation of

actions consistent with the RMP is achieving plan-level desired results (i.e., effectiveness monitoring).

The monitoring plan attached to the RMP focuses specifically on monitoring the implementation and effectiveness of actions consistent with the RMP and is not intended as an all-encompassing strategy that addresses all ongoing monitoring and research efforts. This monitoring plan does not attempt to address research-based questions. There are many ongoing research-based efforts in which the BLM participates that address evaluating whether the RMP is based on correct assumptions (i.e., validation monitoring).

The BLM will continue to rely on the existing interagency effectiveness monitoring modules to address key questions about whether implementing actions consistent with the RMP is effectively meeting RMP objectives. The existing interagency effectiveness modules are aquatic and riparian ecosystems, late-successional and old growth, marbled murrelet, northern spotted owl, socioeconomic, and tribal. Although there are differences in the objectives in the 1995 RMP and the approved RMP, the key questions that the existing interagency effectiveness modules are designed to answer are still relevant to the objectives of the approved RMP. These key questions address fundamental conditions and processes that underlie the objectives of both the 1995 RMP and the approved RMP. As such, answering these key questions through effectiveness monitoring will continue to provide a basis for the BLM to determine whether implementing actions consistent with the RMP is effectively meeting RMP objectives.

The use of this monitoring plan by all BLM offices in the decision area will provide a basis for consistent and coordinated monitoring, and allow district information to be compiled and considered at the scale of the entire decision area. The BLM will evaluate the monitoring questions at each monitoring interval to ascertain if the questions, reporting, methods, sample size, or intervals need to be changed. The BLM would make such changes to the monitoring plan through plan maintenance.

The BLM will conduct plan evaluations at 5-year intervals. In addition to the monitoring results, the BLM will examine many of the underlying assumptions regarding levels of activities and anticipated environmental consequences at the time of the 5-year plan evaluation to determine if the objectives of the approved RMP are being met or are likely to be met. The evaluation will also assess whether changed circumstances or new information have created a situation in which the expected impacts or environmental consequences of the approved RMP are significantly different from those anticipated in the Final EIS. Through the plan evaluation, the BLM will make a finding of whether or not a plan amendment or plan revision is warranted. The BLM will communicate such findings to interagency partners through entities such as the Regional Interagency Executive Committee, as appropriate.

The BLM could conduct unscheduled plan evaluations to address certain unanticipated events or new information that would call into question the underlying analysis and decisions of the approved RMP.

Public Involvement

The BLM initiated the land-use planning process on March 9, 2012, through a Notice of Intent published in the Federal Register (77 FR 14414), soliciting public participation and notifying the public of a formal scoping period, which ended on October 5, 2012. The BLM held scoping open houses in May and June of 2012. The BLM used public scoping comments to help identify planning issues that directed the formulation of alternatives and framed the scope of analysis in the Draft RMP/EIS. In total, the preparation of the Draft RMP/EIS included 38 public involvement efforts, including formal scoping, regional workshops on recreation management, community listening sessions, and public meetings about the Planning Criteria and preliminary alternatives.

On April 24, 2015, the BLM released the Draft RMP/EIS, announcing, at that time, a 90-day comment period that would conclude on July 23, 2015. On July 13, 2015, the BLM extended the comment period on the Draft RMP/EIS until August 21, 2015. During the comment period, the BLM held 17 scheduled public meetings in May and June of 2015. The BLM received approximately 4,500 comments on the Draft RMP/EIS during the comment period.

On April 15, 2016, the Environmental Protection Agency published a Federal Register notice of availability for the Proposed RMP/Final EIS (81 FR 22263), beginning a 30-day protest period. Resolution of protests is delegated to the BLM Assistant Director for Renewable Resources and Planning on behalf of the Director of the BLM, whose decision on the protest is the final decision of the Department of the Interior. The Assistant Director received 46 protest letters timely filed during the 30-day protest period. The BLM reviewed the letters and identified the valid protest issues.

The BLM has resolved all protest issues and responded to each protesting party for each protest issue that was timely raised by a party that had standing to protest, had been previously raised in comments during the planning process to the extent it was possible to do so, and was germane to the planning process. Further, the BLM has determined the Proposed RMP complies with applicable law, regulation, and policy. The BLM has prepared a Protest Resolution Report, which analyzes each unique or summarized protest issue statement. The Director's Protest Resolution Report is available on the BLM website at: http://www.blm.gov/wo/st/en/prog/planning/planning_overview/protest_resolution/protestreports.html.

The BLM maintains a project website that contains an electronic version of the ROD and approved RMP and all of the maps referenced in the approved RMP, as well as the Draft RMP/ EIS, Proposed RMP/Final EIS, and other documents pertinent to the approved RMP. The location of this website could change, but as of the signing of the ROD, the project address is http://www.blm.gov/or/plans/rmpswesternoregon/.

Consultation and Coordination

The BLM has consulted on a government-to-government level with the nine federally recognized tribes located within, or that have interests within, the planning area. The Confederated Tribes of Grand Ronde, the Confederated Tribes of Siletz Indians, the Coquille Indian Tribe, the

Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, the Cow Creek Band of Umpqua Tribe of Indians, and the Klamath Tribes were formal cooperators in the RMP revisions, in addition to their government-to-government status.

The BLM complies with the National Historic Preservation Act (54 U.S.C. 300101 *et seq*.) through the State Protocol with the Oregon State Historic Preservation Office (USDI BLM 2015b) as directed by the National Programmatic Agreement (USDI BLM 2012b). Upon implementation of actions consistent with the approved RMP, the BLM will consult with the Oregon State Historic Preservation Office on Federal undertakings with the potential to effect cultural resources in accordance with the 2015 State Protocol in order to comply with the National Historic Preservation Act.

A Cooperating Agency Advisory Group, comprised of representatives of Federal and State agencies, counties, and Tribes, assisted the BLM in the RMP revision. Working through a robust engagement process with neutral facilitation, the cooperators provided expertise on much of the subject matter the BLM addressed in the RMP revision, as well as advice based on experience with similar planning efforts.

On May 13, 2016, the Environmental Protection Agency provided the BLM with their review of the Proposed RMP/Final EIS, in accordance with their responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (EPA 2016). In that review, the Environmental Protection Agency stated that the Proposed RMP/Final EIS was responsive to their comments and recommendations on the Draft RMP/EIS. Furthermore, they expressed support for the riparian strategy and the harvest strategy of the Proposed RMP. They also expressed support for the monitoring plan in the Proposed RMP/Final EIS, which they found to be adequately detailed and adequate to effectively determine implementation success.

On June 14, 2016, the Governor of Oregon provided the BLM with her consistency review of the Proposed RMP. The purpose of the Governor's consistency review is to ensure consistency of the Proposed RMP with officially approved or adopted resource-related plans, and the policies and programs contained therein, of other Federal agencies, State and local governments, and Indian Tribes, so long as the guidance and resource management plans are also consistent with the purposes, policies, and programs of Federal laws and regulations applicable to public lands (43 CFR 1610.3–2(a)). In her consistency review, the Governor of Oregon raised concerns, requested explanations, and suggested clarifications. However, the consistency review did not identify any State or local plans, and the policies or programs with which she found the Proposed RMP inconsistent and did not recommend any specific changes to the Proposed RMP other than some minor clarifications of wording and additional references. On June 23, 2016, the BLM provided a written response to the Governor, addressing each of the issues raised in the consistency review.

ESA Consultation

The BLM has completed consultation on the Proposed RMP with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service under Section 7(a)(2) of the ESA. The biological opinions from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service each include an incidental take statement with reasonable and prudent measures and associated terms

and conditions. In implementing actions consistent with the RMP, the BLM will comply with these reasonable and prudent measures and the associated terms and conditions described in the incidental take statement. As detailed below, the BLM has determined that these terms and conditions are clearly consistent with the Proposed RMP or have added requirements to the approved RMP. The only additions the BLM has made to the approved RMP related to these terms and conditions are process or reporting requirements and thus do not alter the analysis of environmental effects in the Proposed RMP/Final EIS.

On July 15, 2016, the National Marine Fisheries Service issued a biological opinion that found that the Proposed RMP is not likely to jeopardize the continued existence of any of the species under their jurisdiction, and is not likely to adversely modify critical habitat for any of the species under their jurisdiction. That document also includes the results of the National Marine Fisheries Service analysis of likely effects of the Proposed RMP on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act.

The National Marine Fisheries Service included with their biological opinion an incidental take statement for the effects of the continuing non-commercial use of existing roads and recreational facilities under the Proposed RMP on the species under their jurisdiction. The incidental take statement includes the following three reasonable and prudent measures necessary or appropriate to minimize the impact of the amount or extent of incidental take:

1. The BLM shall implement measures through management direction and anticipated travel management plans to minimize take of ESA-listed species due to sediment and stormwater contaminants derived from the use of roads.
2. The BLM shall implement measures to minimize take of ESA-listed species due to use of recreational facilities by implementing an educational program.
3. The BLM shall monitor and report the measures implemented to minimize take for reasonable and prudent measures #1 and #2.

In implementing actions consistent with the RMP, the BLM will comply with these reasonable and prudent measures and the associated terms and conditions described in the incidental take statement. For reasonable and prudent measure #1, the National Marine Fisheries Service included terms and conditions related to maintaining a spatial database on roads, which the BLM maintains as part of the BLM corporate database, and completing travel management plans, which the BLM has incorporated into **Appendix H** of the approved RMP. For reasonable and prudent measure #2, the National Marine Fisheries Service included terms and conditions related to educational information and signs for recreational facilities, which the BLM can implement consistent with the recreation management objectives and management direction in the approved RMP. For reasonable and prudent measure #3, the National Marine Fisheries Service included terms and conditions related to monitoring the road system and reporting on the completion of travel management plans, both of which are included among the reporting items in the monitoring plan for the approved RMP.

The incidental take statement provides that, within 1 year of the effective date of the ROD, and every 3 years thereafter, the BLM will report to the National Marine Fisheries Service a calculation of the following:

- The total number of recreational facilities within 216 feet of occupied habitat or designated critical habitat.
- The total miles of BLM-managed paved roads occurring within 200 feet of streams.
- The total miles of BLM-managed roads (all surface types) within 200 feet of streams.

Any road miles or recreational sites addressed in project-specific consultations subsequent to the issuance of the ROD or for which the BLM makes a no-effect determination subsequent to the issuance of the ROD should be deducted from the totals. If those resultant totals are greater than 5 percent more than the values described in the incidental take statement for any one species, then the extent of take is exceeded, which will trigger reinitiation of consultation.

On July 20, 2016, the U.S. Fish and Wildlife Service issued a biological opinion that found that the Proposed RMP is not likely to jeopardize the continued existence of any of the species under their jurisdiction, and is not likely to adversely modify critical habitat for any of the species under their jurisdiction. In addition to the regulatory triggers for reinitiation of consultation (50 CFR 402.16), the U.S. Fish and Wildlife Service biological opinion identified the following specific assumptions related to the northern spotted owl and management of barred owls that, if not met, would trigger reinitiation of consultation:

- Implementation of a barred owl management strategy and associated monitoring program that the Service concludes are adequate to achieve and measure the results described in the biological opinion, will begin on BLM-administered lands in the action area within eight years of the effective date of the approved RMP.
- Rates of spotted owl territorial site abandonment resulting from timber harvest in the Harvest Land Base will not exceed 10 percent in the first decade of implementation, 15 percent in the second decade, and 20 percent in each subsequent decade.
- The benchmarks provided in the biological opinion for the rate of spotted owl population change on BLM-administered lands within the action area will be met or exceeded.

The U.S. Fish and Wildlife Service included with their biological opinion an incidental take statement for the effects of the continuing non-commercial use of existing roads under the Proposed RMP on bull trout, Lost River sucker, and shortnose sucker, and for the effects of the continuing use of existing recreational facilities on Lost River sucker and shortnose sucker. The incidental take statement includes the following three reasonable and prudent measures necessary or appropriate to minimize the impact of the amount or extent of incidental take:

1. The BLM shall implement measures through management direction and anticipated travel management plans to minimize take of ESA-listed species due to sediment and stormwater contaminants derived from the use of roads.
2. The BLM shall implement measures to minimize take of Lost River and shortnose suckers due to use of recreational facilities by implementing an educational program.
3. The BLM shall monitor and report the measures implemented to minimize take of ESA-listed species specified under RPMs #1 and #2 above.

In implementing actions consistent with the RMP, the BLM will comply with these reasonable and prudent measures and the associated terms and conditions described in the incidental take statement. The terms and conditions that the U.S. Fish and Wildlife Service included in their incidental take statement are consistent with the terms and conditions that the National Marine

Fisheries Service included in their incidental take statement, with similar reporting requirements and similar requirements for reinitiation of consultation.

New Information

Since the preparation of the Proposed RMP/Final EIS, new information has arisen regarding barred owl removal and the withdrawal of the proposed rule to list the fisher as threatened under the ESA. As discussed below, this new information would not result in significant effects outside the range of effects analyzed in the Proposed RMP/Final EIS and therefore does not require supplementation of the Proposed RMP/Final EIS.

The U.S. Geological Survey released a progress report on experimental removal of barred owls in 2015 in study areas in Washington and Oregon (Wiens *et al.* 2016). The U.S. Geological Survey initiated experimental removal of barred owls in September 2015 in the Cle Elum study area in Washington and the Coast Ranges study area in Oregon, and removed 254 individual barred owls. This removal represented approximately 46 and 44 percent of the total number of individual barred owls detected during surveys of treatment areas in the Cle Elum and Coast Ranges study areas, respectively. This progress report of implementation of the experimental removal of barred owls is consistent with the discussion of BLM participation in barred owl management in the Proposed RMP/Final EIS.

Diller *et al.* (2016) published a study on the demographic response of northern spotted owls to barred owl removal in a barred owl removal experiment on Green Diamond commercially managed timberlands in northern California. That study found that when barred owls were removed from sites where they co-occurred, northern spotted owl extinction rates became comparable to sites where barred owls were never present. Diller *et al*. (2016) concluded that lethal removal of barred owls allowed the recovery of northern spotted owl populations in the treated portions of the study area. The results of this study are consistent with the modeling results in the Proposed RMP/Final EIS, which modified barred owl encounter rates to simulate the effect of barred owl control and found that barred owl control, within the scope of the alternatives and the Proposed RMP, would substantively increase northern spotted owl population response. Therefore, the results of the experimental barred owl control described in Diller *et al.* (2016) are consistent with and support the modeling results in the Proposed RMP/Final EIS.

On April 18, 2016, the U.S. Fish and Wildlife Service withdrew their proposed rule to list the West Coast Distinct Population Segment of fisher, referred to as 'fisher' henceforth, as threatened under the ESA (81 FR 22710). The Proposed RMP/Final EIS acknowledged that the U.S. Fish and Wildlife Service had proposed to list the fisher as threatened on October 7, 2014. The Proposed RMP/Final EIS described the current habitat and population of fisher, the habitat needs of fisher, the main threats to fisher, and analyzed the effects of the alternatives and the Proposed RMP on habitat for fisher and populations of fisher. In their withdrawal of their proposed rule to list the fisher, U.S. Fish and Wildlife Service concluded that the stressors potentially impacting the fisher and its habitat are not of sufficient magnitude, scope, or imminence to indicate that the fisher is in danger of extinction, or likely to become so within the foreseeable future (81 FR 22710). The withdrawal of the proposed rule to list the fisher does not

alter the analysis of effects presented in the Proposed RMP/Final EIS, and there are no significant new circumstances or information relevant to the effects of the alternatives and the Proposed RMP on fisher that would require supplementation of the Proposed RMP/Final EIS.

References

Diller, L. V., K. A. Hamm, D. A. Early, D. W. Lamphear, K. M. Dugger, C. B. Yackulic, C. J. Schwarz, P. C. Carlson, and T. L. McDonald. 2016. Demographic response of northern spotted owls to barred owl removal. Journal of Wildlife Management **80**(4): 691–707. http://dx.doi.org/10.1002/jwmg.1046. https://pubs.er.usgs.gov/publication/70168559.

USDA FS and USDI BLM. 1993a. Salmon National Wild and Scenic River Management Plan. Mt. Hood National Forest, Gresham, OR, and Salem District, Salem, OR. http://www.rivers.gov/documents/plans/salmon-oregon-plan.pdf.

---. 1993b. Sandy Wild and Scenic River and State Scenic Waterway Management Plan. Salem District, Salem, OR. On file at the BLM Salem District office.

---. 2008. Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the United States. http://www.blm.gov/style/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/geothermal_eis/final_programmatic.Par.90935.File.dat/ROD_Geothermal_12-17-08.pdf.

USDA FS, USDI BLM, and Oregon State Parks and Recreation Department. 1992. North Umpqua River Management Plan. Roseburg District, Roseburg, OR. http://www.blm.gov/or/districts/roseburg/plans/files/NoUmpRvr.pdf.

USDC NMFS. 2016. Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat for the Resource Management Plan for Western Oregon. WCR-2016-4089. Portland, OR. 395 pp.

USDI BLM. 1983. Yaquina Head Outstanding Natural Area Management Plan. Salem District, Salem, OR. On file at the BLM Salem District office.

---. 1987. Table Rock Wilderness Management Plan. Salem District, Salem, OR. On file at the BLM Salem District office.

---. 1992. Quartzville Creek National Wild and Scenic River Management Plan. Salem District, Salem, OR. On file at the BLM Salem District office.

---. 1995a. Coos Bay District Record of Decision/Resource Management Plan. Portland, OR.

---. 1995b. Eugene District Record of Decision/Resource Management Plan. Portland, OR.

---. 1995c. Roseburg District Record of Decision/Resource Management Plan. Portland, OR.

---. 1995d. Salem District Record of Decision/Resource Management Plan. Portland, OR.

---. 2001. North Bank Habitat Management Area/ACEC Record of Decision, Habitat Management Plan, and Monitoring Plan. Roseburg, OR. 73 pp. http://www.blm.gov/or/districts/roseburg/plans/files/NBnkACEC.pdf.

---. 2004. Final - Supplemental Environmental Impact Statement Management of Port-Orford-cedar in Southwest Oregon. SEIS. Portland, OR.

---. 2005a. Record of Decision Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments. http://windeis.anl.gov/documents/docs/WindPEISROD.pdf.

---. 2005b. Record of Decision: Integrated Pest Management Program, BLM Travis Tyrell Seed Orchard, Lorane, Lane County, OR. BLM Eugene District, Springfield, OR. 56 pp.

---. 2005c. Record of Decision: Integrated Pest Management Program, BLM Walter H. Horning Tree Seed Orchard, BLM Salem District, Salem, OR.

---. 2009. Approved Resource Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-administered lands in the 11 Western States. http://www.blm.gov/style/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/lands_and_realty.Par.27853.File.dat/Energy_Corridors_final_signed_ROD_1_14_2009.pdf.

---. 2010. Vegetation Treatments Using Herbicides on BLM Lands in Oregon. Record of Decision. Oregon State Office, Portland, OR. http://www.blm.gov/or/plans/vegtreatmentseis/files/Veg_Treatments_ROD_Oct2010.pdf.

---. 2011. Molalla River-Table Rock Recreation Area Management Plan. Salem District, Salem, OR. http://www.blm.gov/or/districts/salem/plans/molalla/files/molalla_plan_complete.pdf

---. 2012a. Bureau of Land Management Travel and Transportation Handbook – 8342. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.34786.File.dat/8342.pdf.

---. 2012b. Programmatic Agreement Among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which the BLM Will Meet Its Responsibilities Under the National Historic Preservation Act.

---. 2015a. West Eugene Wetlands Record of Decision and Resource Management Plan. Eugene District, Eugene, OR. http://www.blm.gov/or/districts/eugene/plans/files/wew-rod.pdf.

---. 2015b. State Protocol Between the Oregon-Washington State Director of the Bureau of Land Management (BLM) and the Oregon State Historic Preservation Officer (SHPO) Regarding the Manner In Which The Bureau of Land Management Will Meet Its' Responsibilities Under the National Historic Preservation Act and the National Programmatic Agreement Among

the BLM, the Advisory Council on Historic Preservation, and The National Conference of State Historic Preservation Officers. Oregon BLM-Oregon SHPO. Portland, OR.

---. 2016. Proposed Resource Management Plan/Final Environmental Impact Statement for the Resource Management Plans for Western Oregon—Coos Bay, Eugene, Medford, Roseburg, and Salem Districts, and the Klamath Falls Field Office of the Lakeview District. Bureau of Land Management, Portland, OR. Vol. I–IV. http://1.usa.gov/1YchHea.

USDI FWS. 2011. Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). USFWS Region 1, Portland, OR. 258 pp. http://www.fws.gov/wafwo/pdf/NSO%20Revised%20Recovery%20Plan%202011.pdf.

---. 2016. Biological Opinion on the Bureau of Land Management's Approval of the Proposed Resource Management Plan for Western Oregon. 01EOFW00-2015-F-0279. Portland, OR. 1,081 pp.

U.S. Environmental Protection Agency (EPA). 2016. Letter from Christine B. Littleton, Environmental Review and Sediment Management Unit Manager, Environmental Protection Agency, to Mark Brown, Project Manager, Bureau of Land Management (May 13, 2016) (on file with the BLM Oregon State Office, Portland, OR).

Wiens, J. D., K. M. Dugger, K. E. Lewicki, and D. C. Simon. 2016. Effects of experimental removal of barred owls on population demography of northern spotted owls in Washington and Oregon—2015 progress report: U.S. Geological Survey Open-File Report 2016-1041. 16 pp. http://dx.doi.org/10.3133/ofr20161041.

Recommendation

I have considered how the alternatives analyzed in the Proposed RMP/Final EIS meet the purpose and need, the associated environmental impacts, and public input. Based on these considerations, I recommend approval of the attached Northwestern and Coastal Oregon Resource Management Plan.

Patricia M. Burke — AUG - 5 2016
Coos Bay District Manager — Date

David O. Howell — AUG - 5 2016
Acting Eugene District Manager — Date

Barbara Machado — AUG - 5 2016
Acting Roseburg District Manager — Date

Kim M. Titus — AUG - 5 2016
Salem District Manager — Date

Concurrence

Ron Dunton — AUG - 5 2016
Acting State Director, Oregon/Washington
Bureau of Land Management — Date

Approval

I approve the attached Northwestern and Coastal Oregon Resource Management Plan as recommended. This Record of Decision is effective immediately.

Steven A. Ellis — AUG - 5 2016
Deputy Director (Operations)
Bureau of Land Management — Date

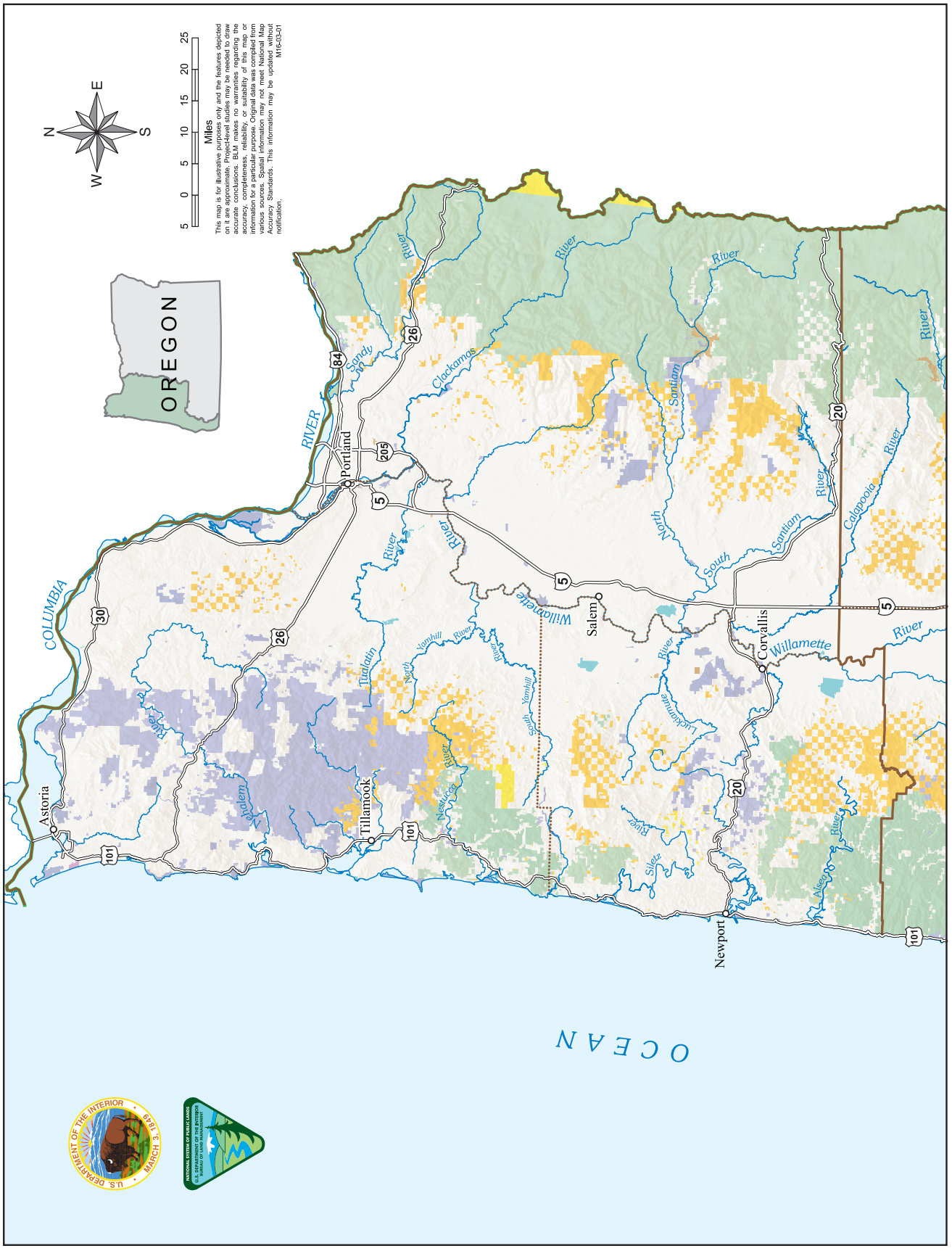
Resource Management Plan

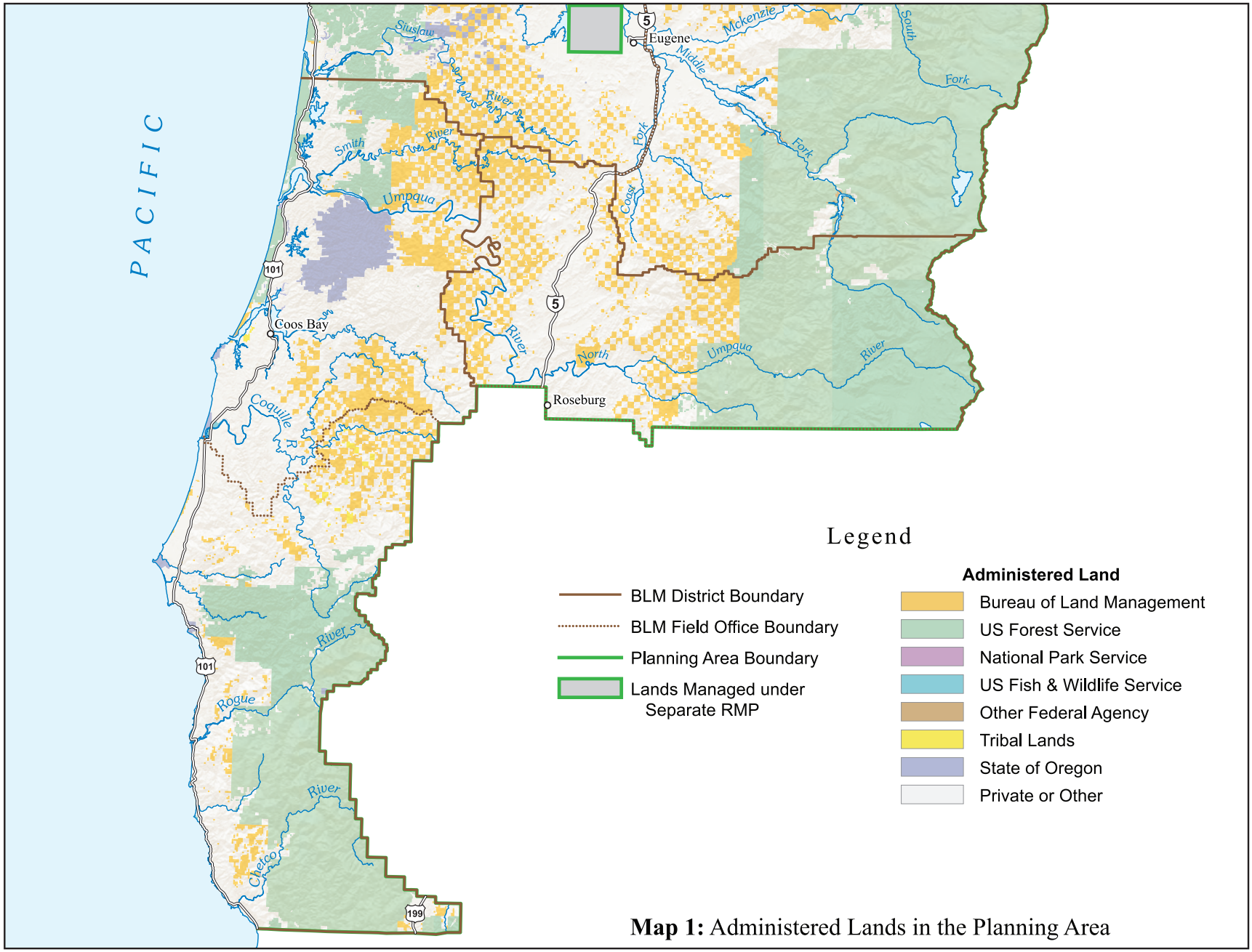
This Northwestern and Coastal Oregon Resource Management Plan includes land use allocations (**Table 1**), management objectives, and management direction for the planning area including the Coos Bay District, Eugene District, Salem District, and Swiftwater Field Office of the Roseburg District (**Map 1**). In addition, it includes appendices addressing RMP implementation, a monitoring plan, Best Management Practices, land tenure information and land withdrawals, stipulations on leasable fluid mineral exploration and development activity, designated Areas of Critical Environmental Concern, designated Recreation Management Areas, and public motorized access guidelines.

Table 1. Land use allocation acres within the Northwestern and Coastal Oregon RMP.

Land Use Allocation	Acres	Sub-allocation	Acres
Congressionally Reserved Lands and National Conservation Lands	32,534	Designated and Suitable Wild and Scenic Rivers	20,290
		Designated Wilderness and Wilderness Study Areas	6,365
		Other	5,879
District-Designated Reserves	79,439	Areas of Critical Environmental Concern*	26,647
		Lands Managed for their Wilderness Characteristics	4,314
		Other	48,479
Harvest Land Base	247,045	Low Intensity Timber Area	61,132
		Moderate Intensity Timber Area	185,913
Late-Successional Reserve	576,714		
Riparian Reserve	329,936		
Totals	**1,265,669**		

***** Acreage does not include Areas of Critical Environmental Concern that overlap the Harvest Land Base.


N
E
S
W
Miles
5 0 5 10 15 20 25
This map is for illustrative purposes only and the features depicted on it are approximate. Readers should verify the needed data and draw conclusions. BLM makes no warranties regarding the accuracy, completeness, reliability, or suitability of this map or information for a particular purpose. Original data was compiled from various sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
M16-03-01
OREGON
COLUMBIA RIVER
OCEAN
Portland
Astoria
Tillamook
Salem
Corvallis
Newport
Sandy River
Clackamas River
Santiam River
North Santiam River
South Santiam River
Calapooia River
Willamette River
Tualatin River
Yamhill River
North Yamhill River
Nestucca River
Siletz River
Alsea River
Lucktamute River
Wilson River
Trask River
84
26
205
5
30
101
20



Map 1: Administered Lands in the Planning Area

Table of Contents

LAND USE ALLOCATIONS **55**
CONGRESSIONALLY RESERVED LANDS AND NATIONAL CONSERVATION LANDS **55**
DISTRICT-DESIGNATED RESERVES **56**
District-Designated Reserve – Areas of Critical Environmental Concern *57*
District-Designated Reserve – Timber Production Capability Classification *57*
District-Designated Reserve – Lands Managed for their Wilderness Characteristics *58*
HARVEST LAND BASE **59**
Harvest Land Base – Low Intensity Timber Area (LITA) *62*
Harvest Land Base – Moderate Intensity Timber Area (MITA) *63*
LATE-SUCCESSIONAL RESERVE **64**
RIPARIAN RESERVE **68**
ADMINISTRATIVE ACTIONS **75**
RESOURCE PROGRAMS **76**
AIR QUALITY **76**
CULTURAL RESOURCES **76**
FIRE, FUELS, AND WILDFIRE RESPONSE **77**
FISHERIES **78**
FOREST MANAGEMENT **79**
HYDROLOGY **79**
INVASIVE SPECIES **80**
LANDS, REALTY, AND ROADS **80**
LIVESTOCK GRAZING **83**
MINERALS **84**
PALEONTOLOGICAL RESOURCES **86**
RARE PLANTS AND FUNGI **86**
RECREATION AND VISITOR SERVICES **88**
Recreation and Visitor Services – Significant Caves *89*
SOIL RESOURCES **89**
SUSTAINABLE ENERGY **90**
Sustainable Energy – Biomass Energy Development *91*
Sustainable Energy – Wind Energy Development *91*
Sustainable Energy – Geothermal Energy Development *92*
Sustainable Energy – Sustainable Energy Transmission Corridors *92*
TRAILS AND TRAVEL MANAGEMENT **93**
VISUAL RESOURCE MANAGEMENT **93**
WILDLIFE **95**
Wildlife – Bald and Golden Eagles *96*
Wildlife – Bats *96*
Wildlife – Deer or Elk Management Areas (Salem District) *96*
Wildlife – Fisher *97*
Wildlife – Gray Wolf *97*
Wildlife – Marbled Murrelet *97*
Wildlife – Northern Spotted Owl *100*
Wildlife – North Oregon Coast Distinct Population Segment of the Red Tree Vole *101*
Wildlife – Pacific Coast Distinct Population Segment of the Western Snowy Plover *102*

Management Objectives and Direction

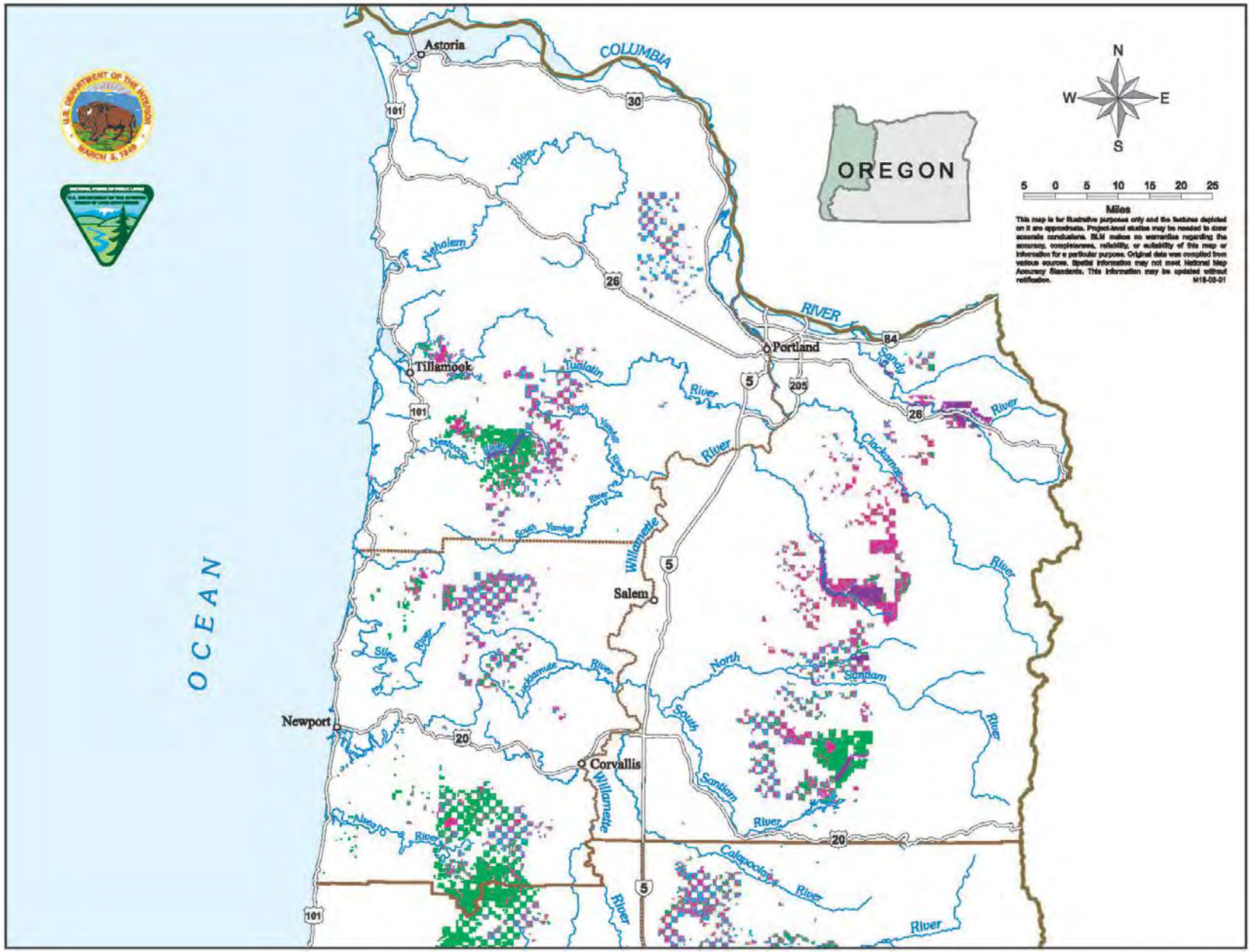
This approved RMP includes management objectives and management direction for land use allocations and for resource programs. The management objectives and management direction described for land use allocations apply only within that land use allocation and appear under the heading for the corresponding land use allocation. The management objectives and management direction described for resource programs apply across land use allocations, unless otherwise noted.

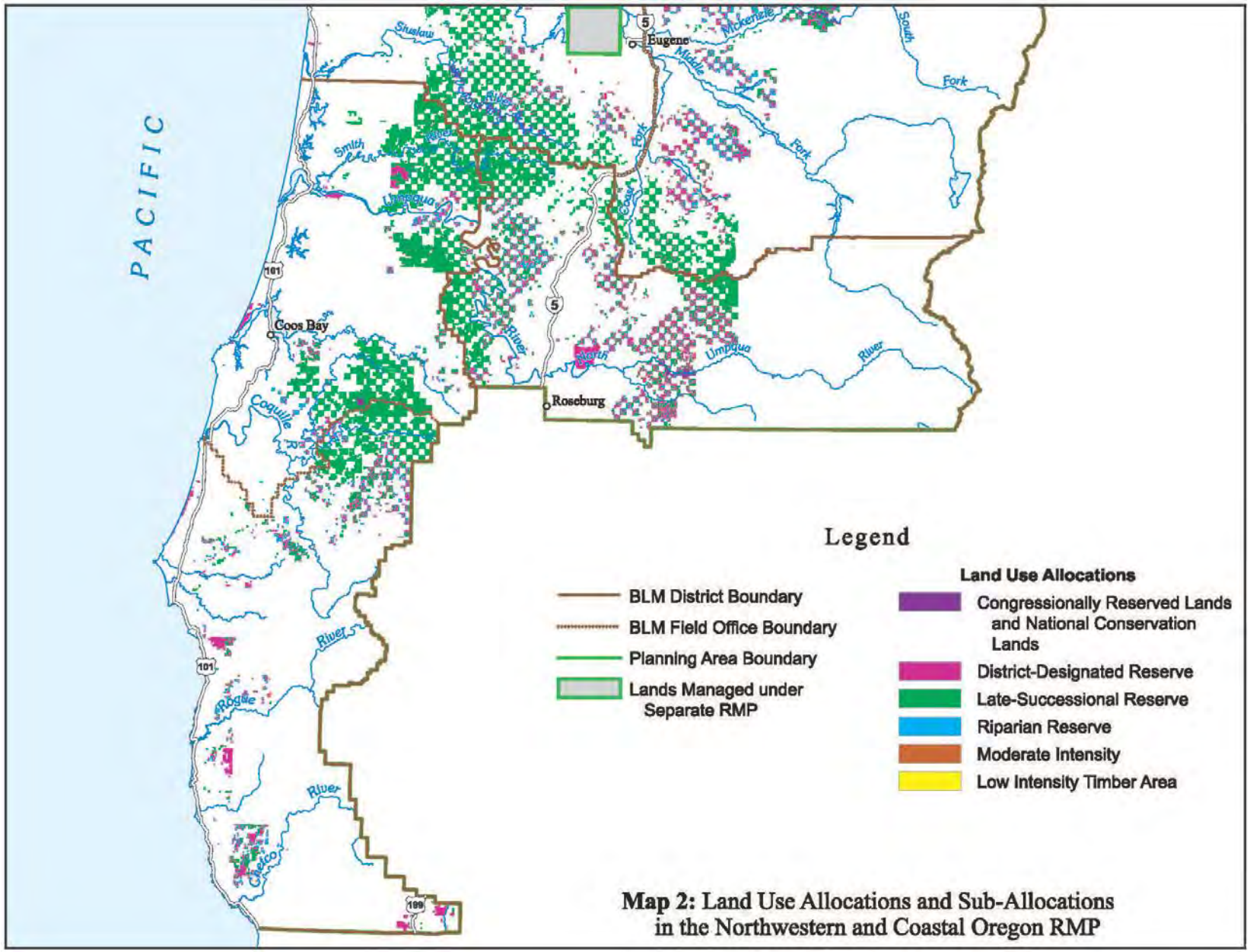
Management objectives are descriptions of desired outcomes for BLM-administered lands and resources in an RMP; the resource conditions that the BLM envisions or desires would eventually result from implementation of actions consistent with the RMP. As such, management objectives are not rules, restrictions, or requirements by which the BLM determines which implementation actions to conduct or how to design specific implementation actions. Through effectiveness monitoring, the BLM will assess whether implementing actions in accordance with the management direction is achieving the management objectives of the RMP (**Appendix B**).

Management direction identifies where future actions may or may not be allowed and what restrictions or requirements may be placed on those future actions to achieve the objectives set for the BLM-administered lands and resources. Through implementation monitoring, the BLM will assess whether the BLM is implementing actions in accordance with management direction of the RMP (**Appendix B**).

Mapping of Land Use Allocations

In this approved RMP, the Harvest Land Base has two, mapped sub-allocations (**Map 2**), which have some differing management objectives and management direction. For these sub-allocations, the management objectives and management direction of the broader allocation apply, as well as the management objectives and management direction specific to that sub-allocation. That is, the Harvest Land Base includes two sub-allocations: Low Intensity Timber Area and Moderate Intensity Timber Area. In each of these sub-allocations, the management objectives and management direction described below for both the Harvest Land Base and the individual sub-allocation apply.


Astoria
COLUMBIA
RIVER
OREGON
N
W
E
S
5 0 5 10 15 20 25
Miles
Portland
Tillamook
Salem
Corvallis
Newport
OCEAN
Nehalem
Tualatin
River
North Yamhill
Nestucca
Willamette
Clackamas
Sandy
Siuslaw
Luckiamute
North Santiam
South Santiam
Calapooia
Alsea
30
101
26
84
5
205
20



Map 2: Land Use Allocations and Sub-Allocations in the Northwestern and Coastal Oregon RMP

In addition, the Riparian Reserve has the same management objectives across the Riparian Reserve, but the management direction varies among three classes of subwatersheds (**Figure 1**). The mapped location of the subwatershed classes in the BLM spatial database represents the decision, and the maps accompanying the RMP are for illustrative purposes only (**Map 3**). For the location of the Riparian Reserve, the decision requires identification of features on the ground (e.g., a perennial stream) and the allocation of a corresponding width of Riparian Reserve.

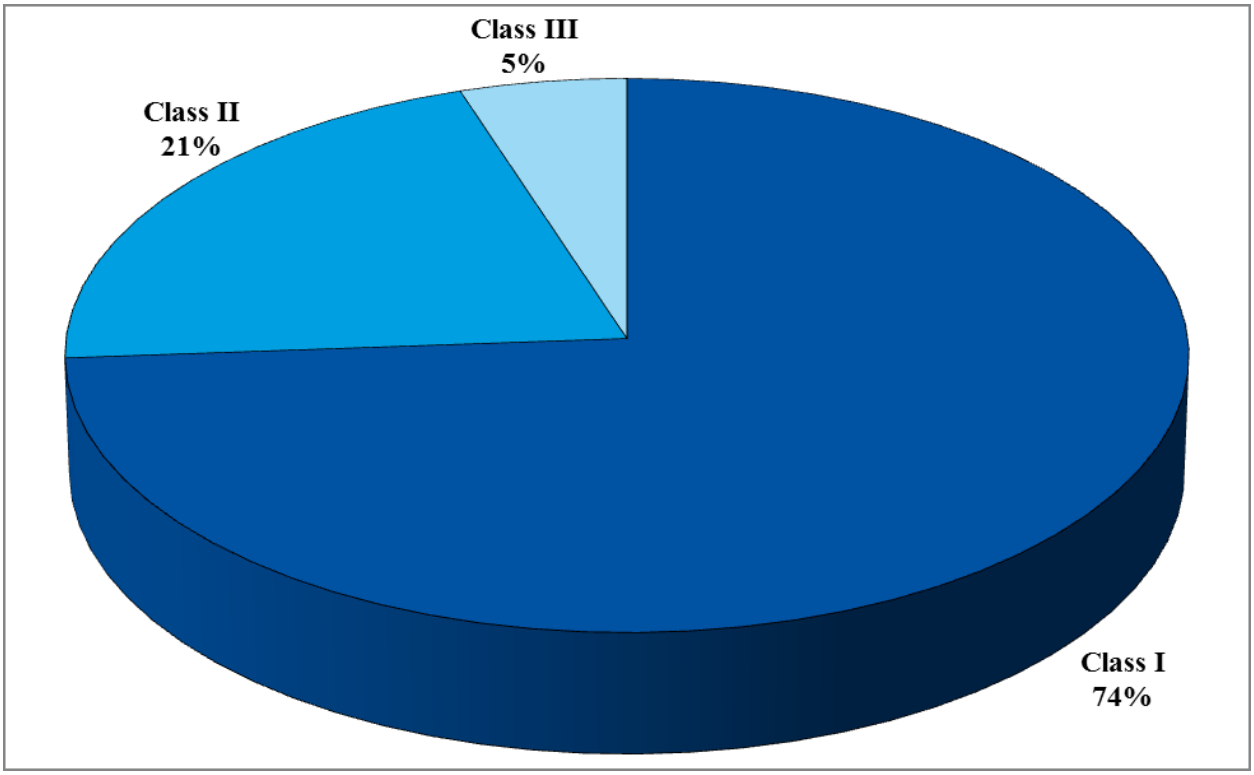
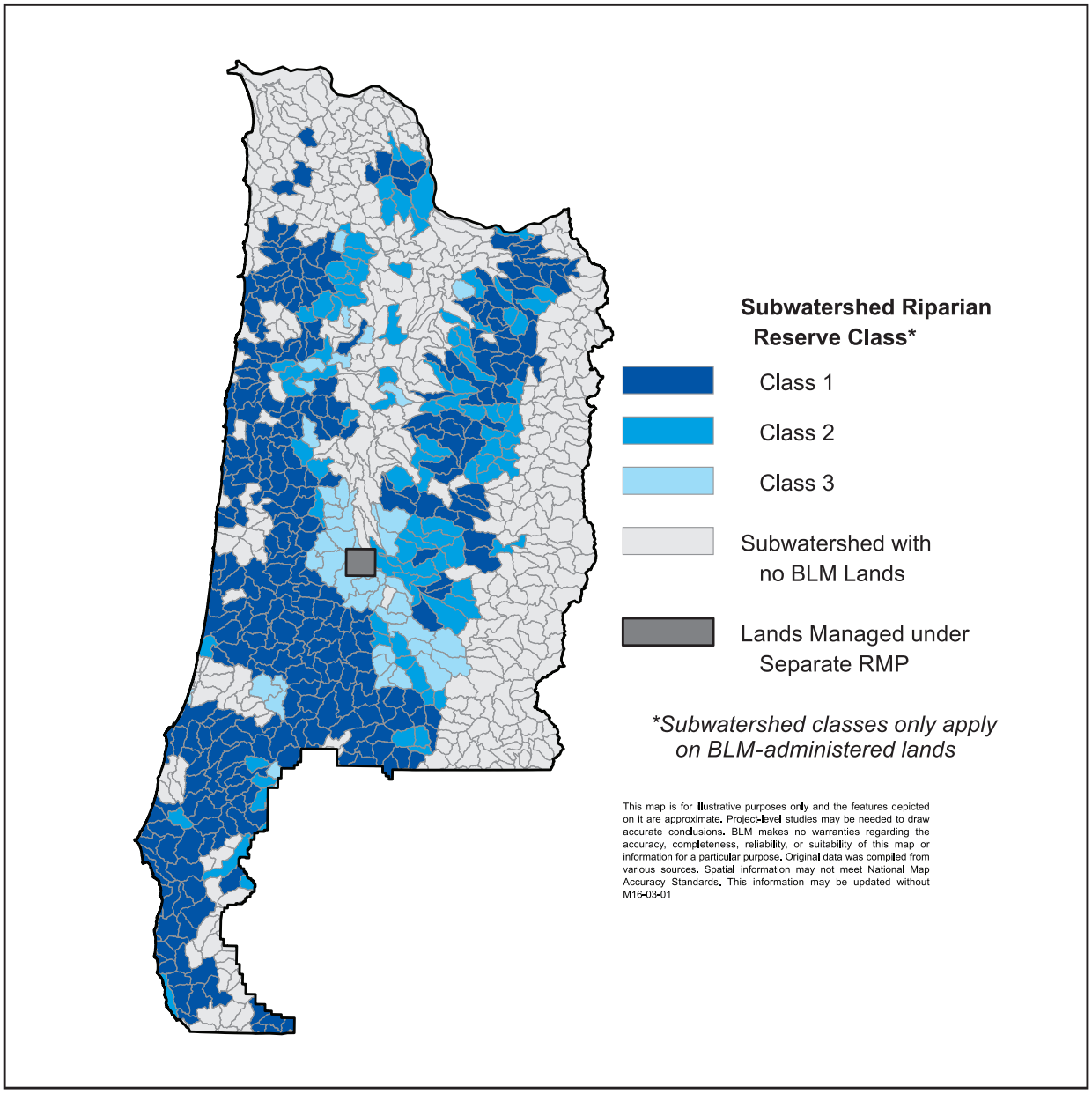


Figure 1. Percent of Riparian Reserve within each subwatershed class for the Northwestern and Coastal Oregon ROD/RMP planning area.



Map 3: Three-tier Subwatershed Classes in the Northwestern and Coastal Oregon RMP

For the District-Designated Reserve – Timber Production Capability Classification, the BLM spatial database includes the current mapped location of this allocation. Over time, the BLM will add additional areas to this allocation through updates to the Timber Production Capability Classification system, when examinations indicate that an area meets the criteria for reservation. The BLM will also delete areas from this allocation and return the area to the Harvest Land Base through updates to the Timber Production Capability Classification system, when examinations indicate that an area does not meet the criteria for reservation.

The decision also requires the future allocation of marbled murrelet occupied stands and red tree vole "habitat areas" to the Late-Successional Reserve, as described in the Record of Decision. This approved RMP requires the future allocation of marbled murrelet occupied stands[15] to the Late-Successional Reserve for occupied sites identified[16] after March 26, 2015, as a result of BLM marbled murrelet surveys in (1) all land use allocations within 35 miles of the Pacific Coast, and (2) Late-Successional Reserve and Riparian Reserve between 35–50 miles from the Pacific Coast and outside of exclusion Areas C and D (**Figure 2**). In addition, this approved RMP requires the future allocation of red tree vole "habitat areas"[17] to the Late-Successional Reserve for occupied sites identified as a result of BLM red tree vole surveys within the range of the North Oregon Coast distinct population segment of the Oregon red tree vole north of Highway 20 (**Figure 3**).

For all other land use allocations and designations, the mapped location of these allocations and designations in the BLM spatial database represents the decision. The BLM provides the maps accompanying the RMP for illustrative purposes only.

[15] Marbled murrelet occupied stand refers to all forest stands, regardless of age or structure, within 1/4 mile (1,320 feet) of the location of marbled murrelet behavior indicating occupancy and not separated from the location of marbled murrelet behavior indicating occupancy by more than 328 feet of non-forest.
[16] In this context, "identified after March 26, 2015," means that BLM survey data for occupied marbled murrelet sites was entered into the BLM corporate database after March 26, 2015.
[17] Red tree vole "habitat areas" are described in the management direction below.

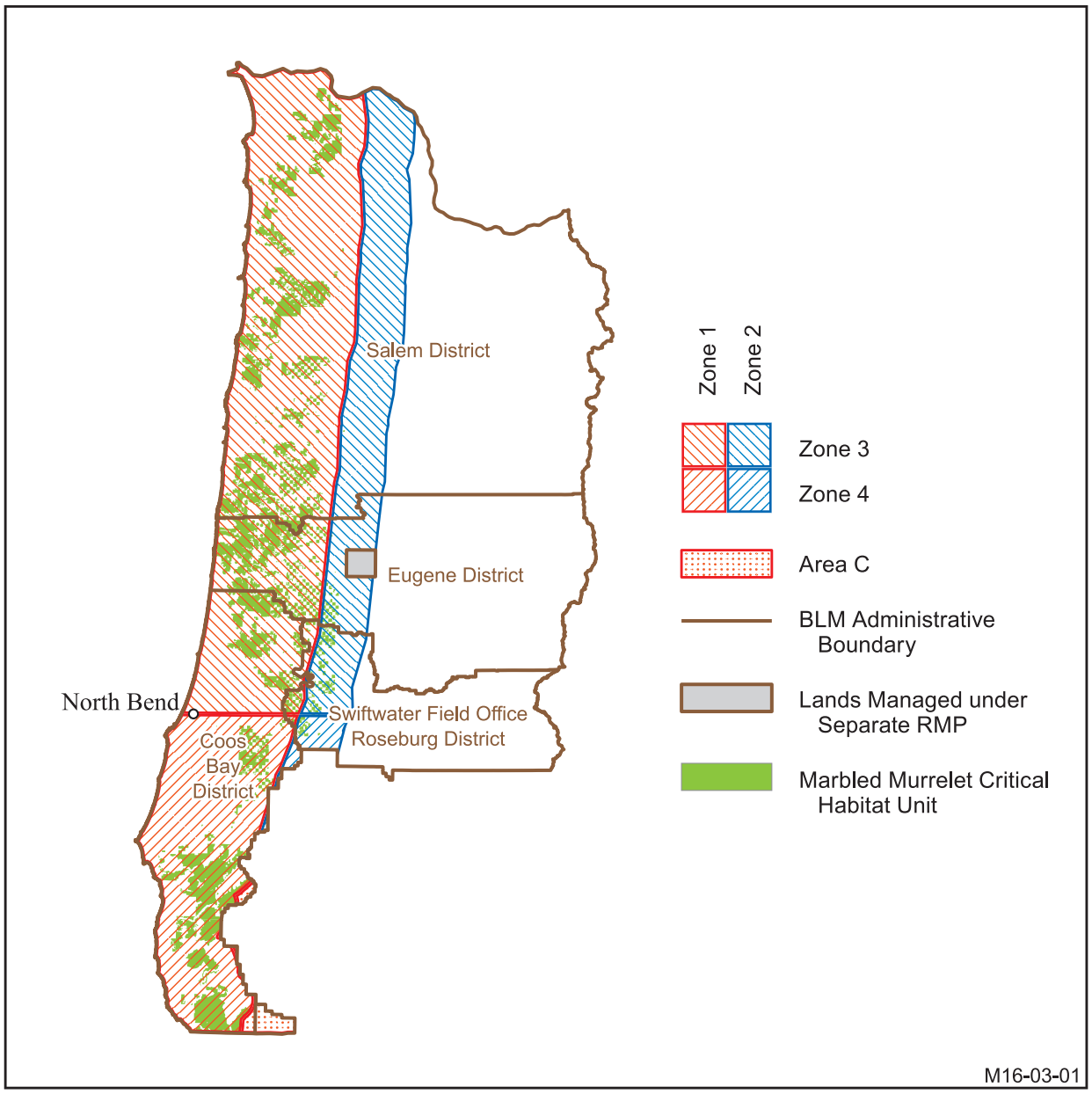


Figure 2: Range and Management Zones for the Marbled Murrelet

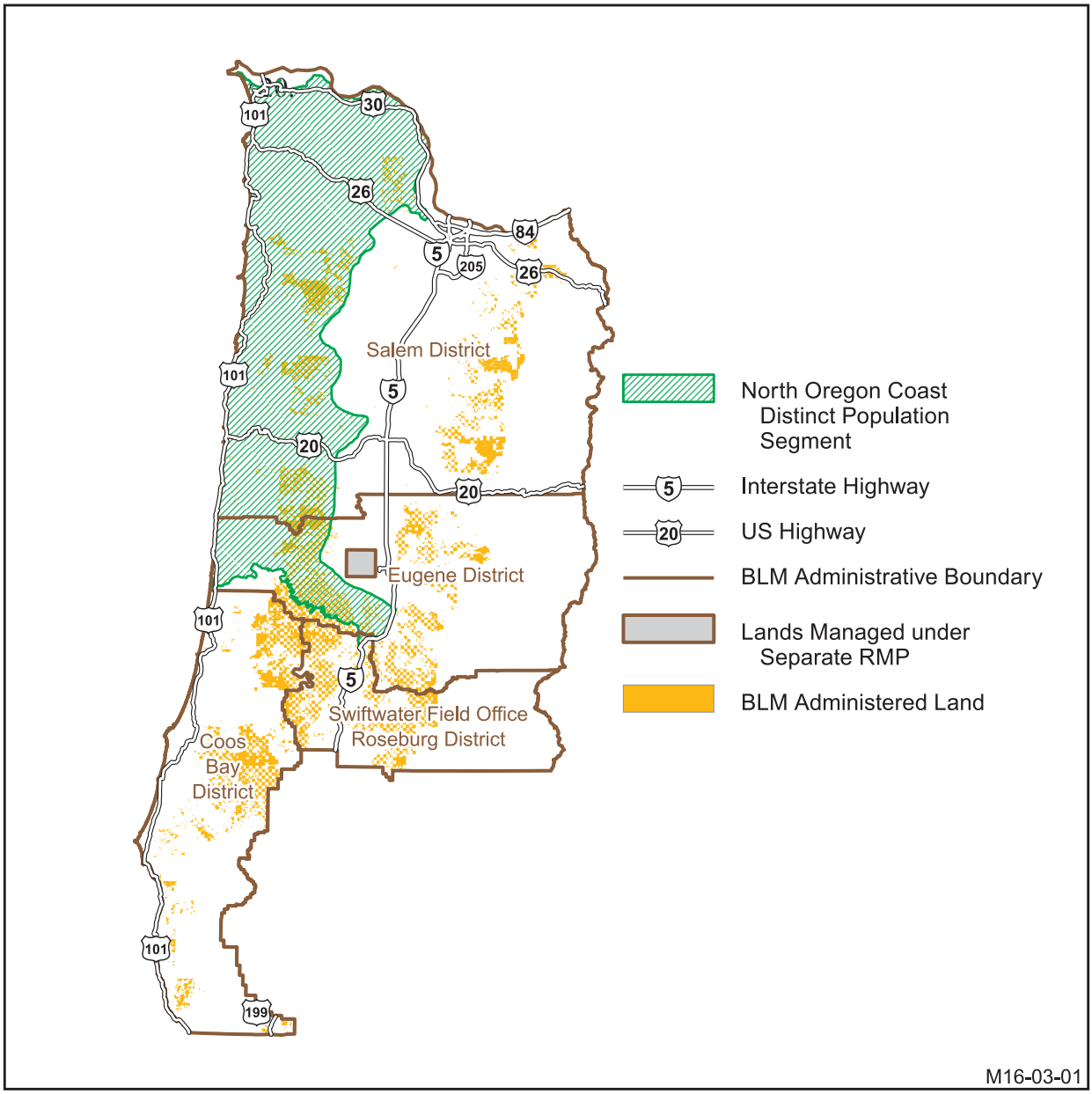


Figure 3: Range of the North Oregon Coast Distinct Population Segment of the Oregon Red Tree Vole North of Highway 20

Land Use Allocations

Congressionally Reserved Lands and National Conservation Lands

Management Objectives

- Conserve, protect, and restore the identified outstanding cultural, ecological, and scientific values of National Conservation Lands and other congressionally designated lands.
- Preserve the wilderness character of designated Wilderness Areas.
- Preserve wilderness characteristics in Wilderness Study Areas in accordance with non-impairment standards as defined under the management policy for Wilderness Study Areas (BLM Manual 6330 – Management of BLM Wilderness Study Areas; USDI BLM 2012a), until Congress either designates these lands as Wilderness or releases them for other purposes.
- Protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values of eligible, suitable, and designated Wild and Scenic River corridors.[18]
- Provide protection to Wild and Scenic River corridors that are suitable for inclusion as components of the National Wild and Scenic Rivers system until Congress makes a decision on designation.
- Provide protection to Wild and Scenic River corridors that are eligible but have not yet been studied for suitability as components of the National Wild and Scenic Rivers system pending suitability evaluations.

Management Direction

- In designated Wilderness Areas, exclude all prohibited uses of Wilderness (as defined in the Wilderness Act of 1964 and BLM Manual 6340 – Management of Designated Wilderness (USDI BLM 2012b)), unless they have been demonstrated to be the minimum necessary (using the minimum requirements decision guide) to administer the area for the purposes of the Wilderness Act.
- Manage wildfires in designated Wilderness Areas using minimum impact suppression techniques wherever practicable, while providing for the safety of firefighters and the public and meeting fire management objectives. Address prohibited uses of Wilderness in wildfire management consistent with BLM Manual 6340 – Management of Designated Wilderness (USDI BLM 2012b).
- Provide for the enjoyment and appreciation of the resources, qualities, values, and associated settings and primary uses within National Trail rights-of-way (including those classified as Scenic, Historical, and Recreational) and for which National Trails are designated.
- Enhance, promote, and protect the scenic, natural, and cultural resource values associated with current and future designated National Scenic and Historic Trails.
- Conduct silvicultural treatments in National Trail management corridors (including those classified as Scenic, Historical, and Recreational) only as needed to protect or maintain recreation setting characteristics or to achieve recreation objectives (**Appendix G**).

[18] Wild and Scenic River corridors include all of the river classifications – Wild, Scenic, and Recreational.

- Conduct management actions, including but not limited to fuels treatments, invasive species management, riparian or wildlife habitat improvements, forest management, and trail construction, in Wild and Scenic River corridors only if consistent with designated or tentative classifications and if any reductions in outstandingly remarkable values would be temporary and outstandingly remarkable values would be protected or enhanced over the long term.
- During wildfire management operations, use strategies and tactics that would protect the outstandingly remarkable values and classifications (or tentative classifications) within Wild and Scenic River corridors, except where the wildfire is deemed a threat to human safety or private property, or where use is essential for wildfire control, as determined by the Incident Commander.
- Conserve and develop the scenic, natural, and historic values of the Yaquina Head Outstanding Natural Area, and allow the continued use of the area for the purposes for which it was designated.

District-Designated Reserves

Management Objectives

- Maintain the values and resources for which the BLM has reserved these areas from sustained-yield timber production.

Management Direction

- Manage constructed facilities and infrastructure, such as seed orchards, roads,[19] communication sites, quarries, buildings, and maintenance yards,[20] as needed for the purposes for which the BLM constructed them.
- Maintain access to roads and facilities by removing hazard trees and blowdown. Such logs may be retained as down woody material, moved for placement in streams for fish habitat restoration, or removed through a commercial harvest or special forest products sale.
- Manage seed orchards consistent with the Seed Orchard Records of Decision for Integrated Pest Management (Eugene and Salem Districts; USDI BLM 2005a, 2005b).

[19] While road corridors are District-Designated Reserves, roads are adjacent to other land use allocations. Management of roads may require actions within adjacent land use allocations, and therefore other land use allocations include management direction pertaining to road management actions.

[20] Existing quarries, communications sites, buildings, maintenance yards, and other constructed facilities are represented in the BLM spatial database as points rather than polygons. The extent of the existing quarry, communications site, building, maintenance yard, or other constructed facility is allocated to the District-Designated Reserve; the lands outside the extent of the existing quarry, communications site, building, maintenance yard, or other constructed facility are allocated to the land use allocation mapped for the location in the BLM spatial database.

District-Designated Reserve – Areas of Critical Environmental Concern[21]

Management Objectives

- *See District-Designated Reserves management objectives.*
- Maintain or restore relevant and important values in Areas of Critical Environmental Concern, including Research Natural Areas and Outstanding Natural Areas.

Management Direction

- Implement activities as necessary to maintain, enhance, or restore relevant and important values (**Appendix F**).
- Maintain access to roads and facilities by removing hazard trees and blowdown. Such logs may be retained as down woody material, moved for placement in streams for fish habitat restoration, or removed through a commercial harvest or special forest products sale.
- During wildfire management operations use strategies and tactics that would not compromise important and relevant values, except where the wildfire is deemed a threat to human safety or private property, or where use is essential for wildfire control, as determined by the Incident Commander.

District-Designated Reserve – Timber Production Capability Classification

Management Objectives

- *See District-Designated Reserves management objectives.*

Management Direction

- Manage areas identified as unsuitable for sustained-yield timber production through the Timber Production Capability Classification system, for other uses if those uses are compatible with the reason for which the BLM has reserved these lands (as identified by the Timber Production Capability Classification codes (USDI BLM 1984)).
- Maintain access to roads and facilities by removing hazard trees and blowdown. Such logs may be retained as down woody material, moved for placement in streams for fish habitat restoration, or removed through a commercial harvest or special forest products sale.
- Apply silvicultural or fuels treatments, including prescribed fire, that restore or maintain community-level structural characteristics, promote desired species composition, and emulate ecological conditions produced by historic fire regimes, in areas identified as unsuitable for

[21] Some Areas of Critical Environmental Concern overlap the Harvest Land Base. Management objectives and management direction for those Areas of Critical Environmental Concern include the management objectives and management direction here in addition to the management objectives and management direction for the Harvest Land Base sub-allocation that the Areas of Critical Environmental Concern overlap. For those individual Areas of Critical Environmental Concern that only partially overlap the Harvest Land Base, the management objectives and management direction for the Harvest Land Base only apply in the portion of the Area of Critical Environmental Concern that overlaps the Harvest Land Base.

sustained-yield timber production through the Timber Production Capability Classification system.

- Designate additional lands as District-Designated Reserve – Timber Production Capability Classification through updates to the Timber Production Capability Classification system and remove those lands from the Harvest Land Base when examinations indicate that those lands meet the criteria for reservation.
- Un-designate lands as District-Designated Reserve – Timber Production Capability Classification and return those lands to the Harvest Land Base through updates to the Timber Production Capability Classification system when examinations indicate that those lands do not meet the criteria for reservation.

District-Designated Reserve – Lands Managed for their Wilderness Characteristics[22]

Management Objectives

- Protect wilderness characteristics (i.e., roadlessness, naturalness, opportunities for solitude and primitive unconfined recreation, and identified supplemental values), while allowing competing resource demands that do not conflict with preserving long-term wilderness characteristics.

Management Direction

- Allow mechanical vegetation treatment consistent with Visual Resource Management Class II for the purpose of improving ecological condition, contributing to threatened or endangered species recovery, or enhancing long-term wilderness characteristics.
- Where a District-Designated Reserve – Lands Managed for their Wilderness Characteristics abuts existing roads or trails, allow road or trail maintenance—
    - Within 300 feet from the edge of the right-of-way, or, if no right-of-way, within 300 feet of the centerline of paved roads;
    - Within 100 feet from the edge of the right-of-way, or, if no right-of-way, within 100 feet of the centerline of regularly maintained unpaved roads;
    - Within 30 feet from the edge of the right-of-way, or, if no right-of-way, within 30 feet of the centerline of unmaintained roads or trails.
- Do not construct new buildings or new temporary or permanent roads.
- Allow trail construction and maintenance, fuels treatments, invasive species management, riparian or wildlife habitat improvements, forest management, and other vegetation management only if any reductions in wilderness characteristics are temporary and wilderness characteristics are protected over the long term.
- During wildfire management operations use strategies and tactics that would protect wilderness characteristics, except where the wildfire is deemed a threat to human safety or private property or where use is essential for wildfire control, as determined by the Incident Commander.

[22] These objectives and direction apply to lands outside of designated Wilderness Areas and Wilderness Study Areas that the BLM has identified as having wilderness characteristics and will manage for the protection of those wilderness characteristics.

- For lands identified for protection of wilderness characteristics where the BLM-administered lands rely on adjoining Federal lands being managed to protect the same values to meet the size criteria (BLM Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands; USDI BLM 2012b) and the agency managing the adjoining lands revises its land use plan to no longer protect wilderness characteristics, the BLM-administered lands will no longer meet the minimum size criteria and thus will no longer possess wilderness characteristics.
    - The BLM will no longer protect wilderness characteristics on these lands and the accompanying land use plan allocations (e.g., right-of-way exclusion, Visual Resource Management Class II) applied specifically to protect the wilderness characteristics will automatically be dropped as part of plan maintenance.
    - The BLM will then manage these lands consistent with the land use allocations, management objectives, and management direction of comparable or adjacent BLM-administered lands.

Harvest Land Base

Management Objectives

- Manage forest stands to achieve continual timber production that can be sustained through a balance of growth and harvest.
- Offer for sale the declared Allowable Sale Quantity of timber.
- Recover economic value from timber following disturbances, such as fires, windstorms, disease, or insect infestations.
- In harvested or disturbed areas, ensure the establishment and survival of desirable trees appropriate to the site and enhance their growth.
- Enhance the economic value of timber in forest stands.

Management Direction

- Conduct silvicultural treatments to contribute timber volume to the Allowable Sale Quantity.
- Conduct silvicultural treatments to enhance timber values and to reduce fire risks and insect and disease outbreaks.
- Conduct regeneration harvest[23] for any of the following reasons:
    - Produce timber to contribute to the attainment of the declared Allowable Sale Quantity.
    - Adjust the age class distribution in each sustained-yield unit.
    - Manage insect and disease infestations.
    - Convert stands capable of supporting conifer species that are currently growing primarily hardwoods or shrubs to a mix of conifer and hardwood species suitable to the site.
    - Increase or maintain vegetative species diversity.
    - Restore and maintain habitat for Bureau Special Status Species.
    - Create growing space for hardwood and pine species persistence and regeneration.
    - Produce complex early-successional ecosystems.

[23] Construction of roads or landings does not constitute regeneration harvest. For the purpose of management direction for the Harvest Land Base, regeneration harvest does not include timber salvage, which has separate management direction.

  - Reset stand development in overly dense stands that would not respond well to commercial thinning.
- Conduct commercial thinning for any of the following reasons:
  - Produce timber to contribute to the attainment of the declared Allowable Sale Quantity.
  - Adjust stand composition or dominance.
  - Reduce stand susceptibility to disturbances such as a fire, windstorm, disease, or insect infestation.
  - Improve stand merchantability and value.
  - Increase or maintain vegetative species diversity.
  - Promote or enhance the development of structural complexity.
  - Create growing space for the creation or augmentation of Bureau Special Status plant populations.
  - Create growing space for hardwood and pine persistence and regeneration.
- Maintain stand densities through commercial thinning to promote stand vigor and health, as specified below:
  - Conduct thinning to result in a stand average relative density between 25 percent and 45 percent after harvest.
  - Leave untreated areas (skips) and create group selection openings[24] to provide structural complexity in the post-treatment stand. Leave at least 5 percent of the planned harvest unit in untreated areas. Do not exceed 10 percent of the planned harvest unit in group selection openings.
  - Include among retained trees all trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically viable or practically feasible. If such trees need to be cut for safety or operational reasons, retain cut trees in the stand. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- During commercial harvest,[25] except timber salvage, and except for safety, operational, or fuels reduction reasons, retain existing—
  - Snags > 20" DBH;
  - Snags 6–20" DBH in decay classes III, IV, and V (see USDI BLM 2010a);
  - Down woody material > 20" in diameter at the large end and > 20' in length; and
  - Down woody material 6–20" in diameter at the large end and > 20' in length in decay classes III, IV, and V (see USDI BLM 2010a).

[24] **Group selection openings** are defined as areas with ≤ 2 live trees ≥ 7" DBH per acre. Roads, landings, yarding corridors, and skid trails do not count as group selection openings.

[25] In the context of management direction for the Harvest Land Base, **commercial harvest** means stand harvesting in which some or all of the cut trees are removed from the stand for timber volume and a monetary value assessed. Commercial harvest in this context does not include the following:

  - Individual tree falling
  - Stand thinning in which all of the cut trees are left in the stand for restoration purposes or the cut trees are removed for firewood, other special forest products, or non-commercial harvest
  - Fuels reduction treatments in which cut trees are burned, chipped, or otherwise disposed of without removal from the stand for timber

Commercial harvest may be implemented through a variety of mechanisms, including timber sale contracts, stewardship agreements, or other types of contracts.

Retain snags ≥ 6" DBH cut for safety or operational reasons as down woody material, unless they would also pose a safety hazard as down woody material.

- When implementing commercial harvest, except timber salvage, in stands with less than 26 snags per acre > 10" DBH and less than 8 snags per acre > 20" DBH on average across the harvest unit, create new snags in the amounts and sizes specified in **Table 2** within 1 year of completion of yarding the timber in the timber sale. If insufficient trees are available in the pre-harvest stand in the size class specified, use trees from the largest size class available. Meet snag creation levels as an average at the scale of the harvest unit; snag creation levels are not required to be attained on every acre. When creating the required number of snags, locate them according to the following criteria:
  - Create snags in a variety of spatial patterns, including aggregated groups and individual trees.
  - Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.
  - Concentrate the creation of snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years.
  - Meet snag creation levels with trees from any species.

Table 2. Snag creation levels within the Harvest Land Base.

District/ Field Office	Province	Number of Snags/Acre Created Within 1 Year of Yarding the Timber in the Timber Sale		
		> 20" DBH	> 10" DBH	Total Snags
Coos Bay	All	1	-	1
Eugene	OR Coast Range	1	-	1
	Western Cascades	1	-	1
Roseburg	OR Coast Range	3	-	3
	Western Cascades	3	3	6
	Klamath	-	-	-
Salem	OR Coast Range	1	-	1
	Western Cascades	1	-	1

- Employ site preparation methods such as mechanical treatments (e.g., machine piling), manual treatments (e.g., brushing), and prescribed burns to prepare newly harvested and inadequately stocked areas for the regeneration of desirable tree species.
- Manually apply supplemental nutrients where necessary to enhance vigor and growth of desired vegetation. Do not use aerial application methods.
- If not suitable for commercial removal, allow cut hazard trees to be available for habitat restoration purposes in any land use allocation, including off-site from the location where such hazard trees are cut.

- Where trees are cut for yarding corridors, skid trails, road construction, maintenance, and improvement, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees, at the discretion of the BLM. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- Where trees are cut for right-of-way permits, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees to the right-of-way permittee, at the discretion of the BLM and consistent with valid existing rights. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.

Harvest Land Base – Low Intensity Timber Area (LITA)

Management Objectives

- *See Harvest Land Base – Moderate Intensity Management Area management objectives.*

Management Direction

- *See Harvest Land Base management direction.*
- In each regeneration harvest unit, retain 15–30 percent of pre-harvest stand basal area in live trees. Retain trees in a variety of spatial patterns, including aggregated groups and individual trees. Include among retained trees all trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically viable or practically feasible. If such trees need to be cut for safety or operational reasons, retain cut trees in the stand. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- After regeneration harvest, use natural or artificial regeneration or both to reforest a mixture of species appropriate to the site to a stand-level average of at least 130 trees per acre within 5 years of harvest.
- Implement timber salvage harvest after disturbance events to recover economic value and to minimize commercial loss or deterioration of damaged trees where the BLM determines that removal is economically viable.
    - In timber salvage harvest units, retain at least 15 percent of pre-harvest stand basal area in live trees or snags in individual harvest units. Retain trees and snags in a variety of spatial patterns, including aggregated groups and individual trees.
    - After salvage harvest, use natural or artificial regeneration or both to reforest a mixture of species appropriate to the site to a stand-level average of at least 130 trees per acre (including surviving trees) within 5 years of harvest.

- For areas without timber salvage harvest after disturbance events, use natural or artificial regeneration or both to reforest a mixture of species appropriate to the site to a stand-level average of at least 130 trees per acre (including surviving trees) within 10 years of the disturbance event, to the extent practicable given safety and operational constraints.

Harvest Land Base – Moderate Intensity Timber Area (MITA)

Management Objectives

- *See Harvest Land Base management objectives.*
- Provide complex early-successional ecosystems.
- Develop diverse late-successional ecosystems for a portion of the rotation.
- Provide a variety of forest structural stages distributed both temporally and spatially.

Management Direction

- *See Harvest Land Base management direction.*
- In each regeneration harvest unit, retain 5–15 percent of pre-harvest stand basal area in live trees. Retain trees in a variety of spatial patterns, including aggregated groups and individual trees. Include among retained trees all trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, except where falling is necessary for safety or operational reasons and no alternative harvesting method is economically viable or practically feasible. If such trees need to be cut for safety or operational reasons, retain cut trees in the stand. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- After regeneration harvest, use natural or artificial regeneration or both to reforest a mixture of species appropriate to the site to a stand-level average of at least 150 trees per acre within 5 years of harvest.
- Implement timber salvage harvest after disturbance events to recover economic value and to minimize commercial loss or deterioration of damaged trees where the BLM determines that removal is economically viable.
    - In timber salvage harvest units, retain at least 5 percent of pre-harvest stand basal area in live trees or snags in individual harvest units. Retain trees and snags in a variety of spatial patterns, including aggregated groups and individual trees.
    - After salvage harvest, use natural or artificial regeneration or both to reforest a mixture of species appropriate to the site to a stand-level average of at least 150 trees per acre (including surviving trees) within 5 years of harvest.
- For areas without timber salvage harvest after disturbance events, use natural or artificial regeneration or both to reforest a mixture of species appropriate to the site to a stand-level average of at least 150 trees per acre (including surviving trees) within 10 years of the disturbance event, to the extent practicable given safety and operational constraints.

Late-Successional Reserve

Management Objectives

- Maintain[26] nesting-roosting habitat for the northern spotted owl and nesting habitat for the marbled murrelet.
- Promote the development of nesting-roosting habitat for the northern spotted owl in stands that do not currently support northern spotted owl nesting and roosting.
- Promote the development of nesting habitat for the marbled murrelet in stands that do not currently meet nesting habitat criteria.
- Promote the development and maintenance of foraging habitat for the northern spotted owl, including creating and maintaining habitat to increase diversity and abundance of prey for the northern spotted owl.

Management Direction

- Manage for large blocks of northern spotted owl nesting-roosting habitat that support clusters of reproducing spotted owls, are distributed across the variety of ecological conditions, and are spaced to facilitate the movement and survival of spotted owls dispersing between and through the blocks.
- In stands that are currently northern spotted owl nesting-roosting habitat, maintain nesting-roosting habitat function, regardless of northern spotted owl occupancy.
- Protect[27] stands of older, structurally-complex conifer forest. Such stands are a subset of, and represent the highest value, northern spotted owl nesting-roosting habitat.

---

[26] **Maintain northern spotted owl nesting-roosting habitat** refers to a silvicultural activity that changes a conifer forest stand but maintains structural characteristics such that the stand continues to support the same northern spotted owl life history requirements: nesting-roosting habitat continues to support northern spotted owl nesting-roosting. Scientific findings support the idea that conifer forest stands can be altered in a manner that does not necessarily change their use by northern spotted owls (see the summary in the Revised Recovery Plan for the Northern Spotted Owl, USDI FWS 2011, p. III-15). Although structural characteristics vary across the northern spotted owl's range, northern spotted owl nesting-roosting habitat generally is characterized by conifer stands with a multi-layered, multispecies canopy dominated by large (> 30" DBH) conifer overstory trees, and an understory of shade-tolerant conifers or hardwoods, ≥ 60 percent canopy cover, substantial decadence in the form of large, live conifer trees with deformities (such as cavities, broken tops, and dwarf mistletoe infections; numerous large snags), ground cover characterized by large accumulations of logs and other woody debris, and a canopy that is open enough to allow northern spotted owls to fly within and beneath it. Activities needed to protect the overall health of the stand or adjacent stands, such as fuels reduction and insect and disease control, and wildfire management actions/activities may occur even if they downgrade or remove northern spotted owl habitat.

Maintain marbled murrelet habitat refers to a silvicultural activity that changes a conifer forest stand but maintains structural characteristics such that the stand continues to support marbled murrelet nesting opportunities. Activities needed to protect the overall health of the stand or adjacent stands, such as fuels reduction and insect and disease control, and wildfire management actions/activities may occur even if they remove marbled murrelet habitat.

[27] **Protect older, structurally-complex conifer forest** means to prohibit harvesting activities in a conifer forest stand except as provided in this definition. Harvesting activities are limited to the following: felling of live or dead hazard trees and logs for streams, the construction, modification, maintenance and removal of linear and nonlinear rights-of-way, spur roads, yarding corridors or other facilities, as long as the forest stand continues to support the same northern spotted owl and marbled murrelet life history requirements: nesting-roosting habitat continues to support northern spotted owl nesting-roosting; dispersal habitat continues to support northern spotted owl movement

- Undertake activities such as individual tree removal, including the felling of hazard trees and stream logs, and the construction of linear and non-linear rights-of-way or other facilities, including communication sites, as long as northern spotted owl nesting-roosting habitat continues to support northern spotted owl nesting and roosting at the stand level, and northern spotted owl dispersal habitat continues to support northern spotted owl movement and survival at the landscape level.
- Protect marbled murrelet occupied stands. In this context, **protect marbled murrelet occupied stands** means to prohibit activities in the occupied stand except for the following: felling of live or dead hazard trees, felling and removal of trees for habitat restoration, and the construction or maintenance of linear and nonlinear rights-of-way, spur roads, yarding corridors or other facilities, as long as the occupied stand continues to support marbled murrelet nesting. Implement wildfire management actions and activities needed to protect the overall health of the stand or adjacent stands, such as fuels reduction and insect and disease control, as long as the occupied stand continues to support marbled murrelet nesting.
- During silvicultural treatment of stands, retain existing—
  - Snags ≥ 6" DBH
  - Down woody material ≥ 6" in diameter at the large end and > 20 feet in length

  except for safety, operational, or fuels reduction reasons. Retain snags ≥ 6" DBH cut for safety or operational reasons as down woody material, unless they would also pose a safety hazard as down woody material.
- Cut or tip individual live trees and move for placement in streams for fish habitat restoration.
- Do not conduct timber salvage, except when necessary to protect public safety, or to keep roads and other infrastructure clear of debris.
- Maintain access to roads and facilities by removing hazard trees and blowdown. Such logs may be retained as down woody material, moved for placement in streams for fish habitat restoration, or removed through a commercial harvest or special forest products sale.
- Where trees are cut for yarding corridors, skid trails, road construction, maintenance, and improvement, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees, at the discretion of the BLM. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- Where trees are cut for right-of-way permits, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees to the right-of-way permittee, at the discretion of the BLM and consistent with valid existing rights. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.

and survival; and marbled murrelet nesting habitat continues to support marbled murrelet nesting. Activities needed to protect the overall health of the stand or adjacent stands, such as fuels reduction and insect and disease control, and wildfire management actions/activities may occur even if they downgrade or remove northern spotted owl habitat or remove marbled murrelet habitat.

- In stands that are not northern spotted owl nesting-roosting habitat, apply silvicultural treatments to speed the development of northern spotted owl nesting-roosting habitat or improve the quality of northern spotted owl nesting-roosting habitat in the stand or in the adjacent stand in the long term. Limit such silvicultural treatments (other than forest pathogen treatments) to those that do not preclude or delay by 20 years or more the development of northern spotted owl nesting-roosting habitat in the stand and in adjacent stands, as compared to development without treatment. Allow silvicultural treatments that do not meet the above criteria if needed to treat infestations or reduce the spread of forest pathogens.
- Utilize integrated vegetation management[28] in designing and implementing treatments. Conduct integrated vegetation management for any of the following reasons:
  - Promote the development and retention of large, open grown trees and multi-cohort stands.
  - Develop diverse understory plant communities.
  - Increase or maintain vegetative species diversity.
  - Restore and maintain habitat for Bureau Special Status species.
  - Promote or enhance the development of structural complexity and heterogeneity.
  - Create growing space for hardwood and pine persistence and regeneration.
  - Create and maintain areas for hardwood and shrub dominance.
  - Adjust stand composition or dominance.
  - Reduce stand susceptibility to disturbances such as a fire, windstorm, disease, or insect infestation.
- In stands ≥ 10 acres treated with selection harvest or commercial thinning,
  - Conduct harvest to result in stand average relative density percent between 20 percent and 45 percent after harvest.
  - Do not create group selection openings[29] more than 4 acres in size.
  - Do not create group selection openings on more than 25 percent of the stand area.
  - Leave untreated skips on at least 10 percent of the stand area.
- In stands < 10 acres treated with selection harvest or commercial thinning, do not create group selection openings more than 2.5 acres in size.
- Use natural or artificial regeneration or both to reforest group selection openings created from selection harvest or commercial thinning with a mixture of species appropriate to the site to an average density across the group selection openings of at least 75 trees per acre within 5 years of harvest.
- When conducting commercial harvest, in stands with less than 64 snags per acre > 10" DBH and less than 19 snags per acre > 20" DBH on average across the harvest unit, create new snags in the amounts and sizes specified in **Table 3** within 1 year of completion of yarding the timber in the timber sale. If insufficient trees are available in the size class specified, use trees from the largest size class available. Meet snag creation levels as an average at the scale

[28] **Integrated vegetation management** includes the use of a combination of silvicultural or other vegetation treatments, fire and fuels management activities, harvest methods, and restoration activities. Activities include but are not limited to vegetation control, planting, snag creation, prescribed fire, thinning, single tree selection harvest, and group selection harvest.

[29] **Group selection openings** are defined as areas with ≤ 2 live trees ≥ 7" DBH per acre. Roads, landings, yarding corridors, and skid trails do not count as group selection openings.

of the harvest unit; snag creation levels need not be attained on every acre. When creating the required number of snags, locate them according to the following criteria:

- Create snags in a variety of spatial patterns, including aggregated groups and individual trees.
- Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.
- Concentrate created snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years.

Table 3. Snag creation levels within the Late-Successional Reserve and Riparian Reserve.

District/ Field Office	Province	Snags/Acre		
		> 20" DBH	> 10" DBH	Total Snags
Coos Bay	All	5	5	10
Eugene	OR Coast Range	5	5	10
	Western Cascades	5	20	25
Roseburg	OR Coast Range	6	7	13
	Western Cascades	6	25	31
	Klamath	1	1	2
Salem	OR Coast Range	5	5	10
	Western Cascades	5	20	25

- When conducting fuels reduction or prescribed fire treatments, retain down woody material at levels specified in **Table 4** post-treatment. Meet down wood levels as an average at the scale of the treatment area following the treatment; down wood levels need not be attained on every acre.

Table 4. Down woody material retention levels when implementing fuels reduction or prescribed fire treatments within the Late-Successional Reserve and Riparian Reserve.

District/Field Office	Province	Down Wood Percent Cover*
Coos Bay	All	6%
Eugene	OR Coast Range	6%
	Western Cascades	10%
Roseburg	OR Coast Range	6%
	Western Cascades	10%
	Klamath	2%
Salem	OR Coast Range	6%
	Western Cascades	10%

* Percent cover of down wood > 4" diameter.

Riparian Reserve

Management Objectives

- Contribute to the conservation and recovery of ESA-listed fish species and their habitats and provide for conservation of Bureau Special Status fish and other Bureau Special Status riparian-associated species.
- Maintain and restore natural channel dynamics, processes, and the proper functioning condition of riparian areas, stream channels, and wetlands by providing forest shade, sediment filtering, wood recruitment, stream bank and channel stability, water storage and release, vegetation diversity, nutrient cycling, and cool and moist microclimates.
- Maintain water quality and streamflows within the range of natural variability, to protect aquatic biodiversity, provide quality water for contact recreation and drinking water sources.
- Meet Oregon Department of Environmental Quality (ODEQ) water quality criteria.
- Maintain high quality water and contribute to the restoration of degraded water quality for 303(d)-listed streams.
- Maintain high quality waters within ODEQ-designated Source Water Protection watersheds.

Management Direction

- Prohibit timber salvage, except when necessary to protect public safety, or to keep roads and other infrastructure clear of debris.
- Maintain access to roads and facilities by removing hazard trees and blowdown from roads and facilities. Retain such logs as down woody material within adjacent stands or move for placement in streams for fish habitat restoration, unless removal of logs, including through commercial harvest, is necessary to maintain access to roads and facilities.
- Allow yarding corridors, skid trails, road construction, stream crossings, and road maintenance and improvement where there is no operationally feasible and economically viable alternative to accomplish other resource management objectives.
- Where trees are cut for yarding corridors, skid trails, road construction, maintenance, and improvement in the Inner Zone or Middle Zone, retain cut trees in adjacent stands as down woody material or move cut trees for placement in streams for fish habitat restoration, at the discretion of the BLM. Where trees are cut for yarding corridors, skid trails, road construction, maintenance, and improvement in the Outer Zone or in Riparian Reserves associated with features other than streams, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees, at the discretion of the BLM. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- Where trees are cut for right-of-way permits in the Inner Zone or Middle Zone, retain cut trees in adjacent stands as down woody material or move cut trees for placement in streams for fish habitat restoration, at the discretion of the BLM and consistent with valid existing rights. Where trees are cut for right-of-way permits in the Outer Zone or in Riparian Reserves associated with features other than streams, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees to

the right-of-way permittee, at the discretion of the BLM and consistent with valid existing rights. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.

- Use site-specific BMPs (**Appendix C**) to maintain water quality during land management actions, including discretionary actions of others crossing BLM-administered lands.
- In new recreational developments, install sanitation systems that maintain water quality (e.g., sealed vault or similar).
- Do not operate ground-based machinery for timber harvest within 50 feet of streams (slope distance), except where machinery is on improved roads, designated stream crossings, or where equipment entry into the 50-foot zone would not increase the potential for sediment delivery into the stream.
- Do not operate ground-based machinery for timber harvest on slopes > 35 percent. Mechanical equipment with tracks (e.g., excavators, loaders, forwarders, and harvesters) may be used on short pitch slopes of greater than 35 percent but less than 45 percent when necessary to access benches of lower gradient (length determined on a site-specific basis, generally less than 50 feet (slope distance)).
- During silvicultural treatment of stands, retain existing—
  - Snags ≥ 6" DBH
  - Down woody material ≥ 6" in diameter at the large end and > 20 feet in length

  except for safety, operational, or fuels reduction reasons. Retain snags ≥ 6" DBH cut for safety or operational reasons as down woody material, unless they would also pose a safety hazard as down woody material.
- Implement sudden oak death (SOD) eradication activities that do not exceed (at the HUC 10 watershed scale)—
  - The removal of > 30 percent canopy cover over a contiguous 0.5 mile stream length or removal of > 50 percent canopy cover over a contiguous 0.25 mile stream length for small perennial streams (active channel width < 27 feet) where a 4,600-foot separation of non-treatment between sequential contiguous treatments would be maintained;
  - The removal of > 50 percent canopy cover over a contiguous 0.5 mile stream length for medium-large perennial streams (active channel width > 27 feet) where a 4,600-foot separation of non-treatment between sequential contiguous treatments would be maintained; and
  - A limit of 3 miles of treatment for any 5-year period and 3 percent of the total Federal perennial stream miles.

  Implement SOD eradication activities that exceed these limitations only consistent with existing ESA consultation documents that address SOD eradication activities in the decision area.
- Cut or tip individual live trees and move for fish habitat restoration.
- Cut or tip individual live trees directly into the stream channel for fish habitat restoration.

- Tree tipping: When conducting commercial thinning[30] in any portion of the Outer Zone in a stand in all watershed classes, cut or tip from 0 to 15 square feet of basal area per acre of live trees, averaged across the Riparian Reserve portion of the treated stand. Leave cut or tipped trees on site or yard, deck, and make cut or tipped trees available for fish habitat restoration. The cut or tipped trees can be of any size and come from any zone.
- Promote beaver habitat restoration where the presence of beaver and their associated dams would improve fish and aquatic habitat.
- Along ponds and wetlands < 1 acre and constructed water impoundments of any size, treat vegetation as needed for habitat restoration, access, or safety.
- For constructed water impoundments and constructed ponds:
  - Follow inspection guidelines for BLM infrastructure (e.g., dams and spillway structures), and implement maintenance and repair as needed.
  - Dredge constructed water impoundments as necessary to maintain capacity.
  - Maintain vegetation, access, and plumbing associated with sources of water for fire management purposes for all types of firefighting equipment (e.g., engines, aircraft, and tenders).

Table 5. Riparian Reserve distance by water feature.

Feature	Riparian Reserve Distance*
Fish-bearing streams and perennial streams	One site-potential tree height distance from the ordinary high water line or from the outer edge of the channel migration zone for low-gradient alluvial shifting channels, whichever is greatest, on each side of a stream
Intermittent, non-fish-bearing streams	Class I and II subwatersheds: One site-potential tree height distance from the ordinary high water line on each side of a stream
	Class III subwatersheds: 50 feet from the ordinary high water line on each side of a stream
Unstable areas that are above or adjacent to stream channels and are likely to deliver material such as sediment and logs to the stream if the unstable area fails	The extent of the unstable area; where there is a stable area between such an unstable area and a stream, and the unstable area has the potential to deliver material such as sediment and logs to the stream, extend the Riparian Reserve from the stream to include the intervening stable area as well as the unstable area
Lakes, natural ponds and reservoirs > 1 acre, and wetlands > 1 acre	100 feet extending from the ordinary high water line
Natural ponds < 1 acre, wetlands < 1 acre (including seeps and springs), and constructed water impoundments (e.g. canal ditches and pump chances) of any size	25 feet extending from the ordinary high water line

* Reported distances are measured as slope distance

[30] In the context of management direction for the Riparian Reserve, **commercial thinning** means stand thinning in which any of the cut trees are removed from the stand for timber volume. Commercial thinning in this context does not include individual tree cutting or tipping or stand thinning in which all of the cut trees are left in the stand for restoration purposes, or fuels reduction treatments in which cut trees are burned, chipped, or otherwise disposed of without removal from the stand for timber. Commercial thinning may be implemented through a variety of mechanisms, including timber sale contracts, stewardship agreements, or other types of contracts.

Table 6. Zone-specific management direction for streams in Class I subwatersheds.

Fish-bearing streams and perennial streams
Inner Zone (0–120 feet)
Do not thin stands, except for— • SOD treatments; and • Individual tree cutting or tipping for restoration or to meet the tree-tipping management direction associated with outer zone commercial thinning
Outer Zone (120 feet to one site-potential tree height)
Thin stands as needed to ensure that stands are able to provide trees that would function as stable wood in the stream. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the portion of the harvest unit within the Riparian Reserve. Merchantable timber from thinning and other silvicultural treatments may be made available for sale. When conducting commercial thinning, create new snags in the amounts and sizes specified in **Table 3** within 1 year of completion of yarding the timber in the timber sale. If trees are not available in the size class specified, use trees from the largest size class available. Snag creation amounts would be met as an average at the scale of the portion of the harvest unit within the Riparian Reserve, and need not be attained on every acre. For implementation— • Create snags in a variety of spatial patterns, including aggregated groups and individual trees. • Concentrate created snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years. Snag creation levels can be met with trees from any species. • Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.
Intermittent, non-fish-bearing streams
Inner Zone (0–50 feet)
Do not thin stands, except for— • SOD treatments; and • Individual tree cutting or tipping for restoration or to meet the tree-tipping management direction associated with outer zone commercial thinning
Middle Zone (50–120 feet)
Thin stands as needed to ensure that stands are able to provide trees that would function as stable wood in the stream. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the portion of the harvest unit within the Riparian Reserve. Remove cut or tipped trees only as needed for safety or operational reasons, or to meet the tree-tipping management direction described above.

Outer Zone (120 feet to one site-potential tree height)
Thin stands as needed to ensure that stands are able to provide trees that would function as stable wood in the stream. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the harvest unit within the Riparian Reserve. Merchantable timber from thinning and other silvicultural treatments may be made available for sale. When conducting commercial thinning, create new snags in the amounts and sizes specified in **Table 3** within 1 year of completion of yarding the timber in the timber sale. If trees are not available in the size class specified, use trees from the largest size class available. Snag creation amounts would be met as an average at the scale of the portion of the harvest unit within the Riparian Reserve, and need not be attained on every acre. For implementation— • Create snags in a variety of spatial patterns, including aggregated groups and individual trees. • Concentrate created snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years. Snag creation levels can be met with trees from any species. • Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.

Table 7. Zone-specific management direction for streams in Class II subwatersheds

Fish-bearing streams and perennial streams
Inner Zone (0–120 feet)
Do not thin stands, except for— • SOD treatments; and • Individual tree cutting or tipping for restoration or to meet the tree-tipping management direction associated with outer zone commercial thinning
Outer Zone (120 feet to one site-potential tree height)
Thin stands as needed to promote the development of large, open grown trees, develop layered canopies and multi-cohort stands, develop diverse understory plant communities, and allow for hardwood vigor and persistence. Apply silvicultural treatments to increase diversity of riparian species and develop structurally-complex stands. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the portion of the harvest unit within the Riparian Reserve. Merchantable timber from thinning and other silvicultural treatments may be made available for sale.

When conducting commercial thinning, create new snags in the amounts and sizes specified in **Table 3** within 1 year of completion of yarding the timber in the timber sale. If trees are not available in the size class specified, use trees from the largest size class available. Snag creation amounts would be met as an average at the scale of the portion of the harvest unit within the Riparian Reserve, and need not be attained on every acre. For implementation:

- Create snags in a variety of spatial patterns, including aggregated groups and individual trees.
- Concentrate created snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years. Snag creation levels can be met with trees from any species.
- Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.

Intermittent, non-fish-bearing streams

Inner Zone (0–50 feet)

Do not thin stands, except for—

- SOD treatments; and
- Individual tree cutting or tipping for restoration, or to meet the tree-tipping management direction associated with outer zone commercial thinning

Outer Zone (50 feet to one site-potential tree height)

Thin stands as needed to promote the development of large, open grown trees, develop layered canopies and multi-cohort stands, develop diverse understory plant communities, and allow for hardwood vigor and persistence. Apply silvicultural treatments to increase diversity of riparian species and develop structurally-complex stands. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the portion of the harvest unit within the Riparian Reserve.

Merchantable timber from thinning and other silvicultural treatments may be made available for sale.

When conducting commercial thinning, create new snags in the amounts and sizes specified in **Table 3** within 1 year of completion of yarding the timber in the timber sale. If trees are not available in the size class specified, use trees from the largest size class available. Snag creation amounts would be met as an average at the scale of the portion of the harvest unit within the Riparian Reserve, and need not be attained on every acre. For implementation:

- Create snags in a variety of spatial patterns, including aggregated groups and individual trees.
- Concentrate created snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years. Snag creation levels can be met with trees from any species.
- Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags

beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.

Table 8. Zone-specific management direction for streams in Class III subwatersheds

Fish-bearing streams and perennial streams
Inner Zone (0–120 feet)
Do not thin stands, except for— • SOD treatments; and • Individual tree cutting or tipping for restoration, or to meet the tree-tipping management direction associated with outer zone commercial thinning
Outer Zone (120 feet to one site-potential tree height)
Thin stands as needed to promote the development of large, open grown trees, develop layered canopies and multi-cohort stands, develop diverse understory plant communities, and allow for hardwood vigor and persistence. Apply silvicultural treatments to increase diversity of riparian species and develop structurally-complex stands. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the portion of the harvest unit within the Riparian Reserve. Merchantable timber from thinning and other silvicultural treatments may be made available for sale. When conducting commercial thinning, create new snags in the amounts and sizes specified in **Table 3** within 1 year of completion of yarding the timber in the timber sale. If trees are not available in the size class specified, use trees from the largest size class available. Snag creation amounts would be met as an average at the scale of the portion of the harvest unit within the Riparian Reserve, and need not be attained on every acre. For implementation: • Create snags in a variety of spatial patterns, including aggregated groups and individual trees. • Concentrate created snags in areas of the stand where the BLM does not presently anticipate skidding or yarding will occur within 20 years. Snag creation levels can be met with trees from any species. • Do not create snags within falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete. If it is not possible to create snags beyond the falling distance of power lines, structures, or roads that will remain open after harvesting activities are complete, cut trees equivalent to the required number of snags and retain as down woody material within the harvest unit.
Intermittent, non-fish-bearing streams (0–50 feet)
Do not thin stands, except for— • SOD treatments; and • Individual tree cutting or tipping for restoration, or to meet the tree-tipping management direction associated with outer zone commercial thinning.

Administrative Actions

Management Objective

- Provide for the orderly and efficient management of resources.

Management Direction

- Implement administrative actions in any land use allocation to the extent consistent with land use allocation management direction and consistent with other applicable law (e.g., NEPA and ESA). Administrative actions include but are not limited to the following actions:
  - Competitive and commercial recreation activities
  - Special forest product collection permit issuance
  - Lands and realty actions (e.g., the issuance of grants, leases, and permits)
  - Trespass resolution
  - Facility maintenance
  - Facility improvements
  - Road maintenance
  - Hauling permit issuance
  - Recreation site maintenance
  - Recreation site improvement
  - Hazardous materials removal
  - Abandoned Mine Land physical closure or removal and environmental remedial actions
  - Law enforcement
  - Legal land or mineral estate ownership surveys
  - Cadastral and engineering surveys
  - Field visits for the design of projects (including clearance inventories) and contract administration
  - Tree sampling (including using the 3P fall, buck, and scale sampling method)
  - Project implementation monitoring and plan effectiveness monitoring
  - Incidental live or dead tree removal for safety or operational reasons
  - Wildlife, fisheries, or plant community population survey or monitoring

Resource Programs

Air Quality

Management Objectives

- Protect air quality related values in Federal mandatory Class I areas.
- Prevent exceedances of National, State, or local ambient air quality standards.

Management Direction

- Comply with the Oregon Smoke Management Plan when implementing prescribed burning activities.
- Use BMPs (**Appendix C**) to reduce dust from unpaved road surfaces during extended management operations, such as timber sales and wildfire management actions/activities. Example practices include applying dust suppressants.
- Follow State Implementation Plan requirements for activities that could negatively affect the status of air quality non-attainment or maintenance areas.

Cultural Resources

Management Objectives

- Preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations.
- Reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration or potential conflict with other resources by ensuring that all authorizations for land and resource use comply with Section 106 of the National Historic Preservation Act.

Management Direction

- Evaluate all documented cultural resources for National Register of Historic Places eligibility. For all sites that are listed or eligible for listing on the National Register of Historic Places, protect sites through avoidance or other protection measures.
- Conduct public education and outreach activities, and develop materials in order to educate and interpret for the public the cultural and historic resources within the decision area.
- Assign all cultural resources into one of the use allocations in **Table 9**.

Table 9. Cultural use allocations with desired outcomes and management actions

Use Allocation	Desired Outcome	Management Action
Scientific use	Preserved until research potential is realized	Permit appropriate research including data recovery
Conservation for future use	Preserved until conditions for use are met	Propose protection measures/designations
Traditional use	Long-term preservation	Consult with Tribes; determine limitations
Public use	Long-term preservation, on-site interpretation	Determine limitations, permitted uses
Experimental use	Protected until used	Determine nature of experiments
Discharged from management	No use after recordation, not preserved	Remove protective measures

Fire, Fuels, and Wildfire Response

Management Objectives

- Respond to wildfires in a manner that provides for public and firefighter safety while meeting land management objectives by utilizing the full range of fire management options.
- Fire management strategies would be risk-based decisions that consider firefighter and public safety, values at risk, management objectives, and costs that are commensurate with the identified risk.
- Actively manage the land to restore and maintain resilience of ecosystems to wildfire and decrease the risk of uncharacteristic, large, high-intensity/high-severity wildfires.
- Manage fuels to reduce wildfire hazard, risk, and negative impacts to communities and infrastructure, landscapes, ecosystems, and highly valued resources.
- Manage fire, fuels, and wildfire response consistent with the National Cohesive Wildland Fire Management Strategy.
- Participate with communities bordering Federal lands in partnership with local, State, and Federal stakeholders to reduce the risks and threats from wildland fire.

Management Direction

- Take immediate action to suppress all unplanned human-caused ignitions at the lowest cost commensurate with the protection of firefighter and public safety and welfare, and resulting in the fewest negative consequences to natural and cultural resources.
- Allow application of the full range of fire management options in responding to natural ignitions or escaped prescribed fires. These fires may be used to achieve management objectives when expected fire behavior and potential effects of a fire, or a part of a fire, are aligned with the management objectives and direction of the underlying land use allocation and affected resources.

- Conduct wildfire rehabilitation and restoration actions to protect and sustain ecosystems, ecosystem services, public health and safety, and infrastructure adversely affected by fire management operations or direct fire effects.
- Treat both management activity fuels and natural hazardous fuels for any of the following reasons:
  - Modify the fuel profile (e.g., raise canopy base heights or reduce surface and ladder fuels and crown bulk density)
  - Reduce potential fire behavior (e.g., crown fire activity, wildfire spread, and intensity)
  - Reduce potential fire severity
  - Improve effective fire management opportunities within the Wildland Urban Interface[31] or in close proximity to other highly valued resources
- Treat fuels in a way that increase intervals between future maintenance treatments.
- Create fuel beds or fuel breaks that reduce the potential for high-intensity/high-severity fire spread within the wildland urban interface or in close proximity to highly valued resources.
- Prior to applying prescribed fire, take necessary mitigation actions to reduce impacts to Bureau Special Status Species wildlife and plants and their habitats.
- Conduct necessary vegetation maintenance treatments to ensure that fire management operations are able to access existing natural and human-made strategic infrastructure (e.g., communication sites, pump chances and other wildfire management actions/activities water sources, key road systems, containment lines, fuel breaks, and helispots).

Fisheries

Management Objectives

- Improve the distribution and quantity of high-quality fish habitat across the landscape for all life stages of ESA-listed, Bureau Special Status Species, and other fish species.
- Maintain and restore access to stream channels for all life stages of aquatic species.

Management Direction

- Restore degraded spawning, rearing, and holding habitat for fish using a combination of accepted techniques including but not limited to log and boulder placement in stream channels, tree tipping, and gravel enhancement.
- Remove or modify human-caused fish passage barriers to restore access to stream channels for all life stages for native aquatic species.

[31] The Wildland Urban Interface includes wildland developed areas.

Forest Management

Management Objectives

- Enhance the health, stability, growth, and vigor of forest stands.
- In harvested or disturbed areas, ensure the establishment and survival of desirable vegetation appropriate to the site.
- Facilitate safe and efficient forestry operations for the BLM, reciprocal right-of-way agreement holders, and permittees.

Management Direction

- Promote the establishment and survival of desirable vegetation through stand maintenance treatments.
- Apply thinning or prescribed fire to forest stands as needed to achieve appropriate stocking and density levels.
- Use genetically improved native trees for reforestation when available.
- Fall and move live or dead trees as needed for safety or operational reasons, including, but not limited to, the creation of landings, yarding corridors, or skid trails within or adjacent to nearby harvest units, hazard tree removal, and road construction, improvement, or maintenance.
- Allow road construction, maintenance, improvement, and decommissioning as well as construction of skid trails and yarding corridors based on operational needs and consistent with valid existing rights.
- Allow management activities in density management study sites (Cissel *et al.* 2006) that are compatible with study objectives.

Hydrology

Management Objective

- Maintain water quality within the range of natural variability that meets ODEQ water quality standards for drinking water, contact recreation, and aquatic biodiversity.

Management Direction

- Select and implement site-level BMPs (**Appendix C**) to maintain water quality for BLM actions (including, but not limited to, road construction, road maintenance, silvicultural treatments, recreation management, prescribed burning, and wildfire management actions/activities) and discretionary actions of others crossing BLM-administered lands.
- Design culverts, bridges, and other stream crossings for a 100-year flood event, including allowance for bed load and anticipated floatable debris. Culverts will be of adequate width to preclude ponding of water higher than the top of the culvert. For streams with ESA-listed fish, design stream crossings to meet design standards consistent with existing ESA consultation documents that address stream crossings in the decision area.

- Implement road improvements, storm proofing, maintenance, or decommissioning to reduce or eliminate chronic sediment inputs to stream channels and waterbodies. This could include maintaining vegetated ditch lines, improving road surfaces, and installing cross drains at appropriate spacing.
- Suspend commercial road use where the road surface is deteriorating due to vehicular rutting or standing water, or where turbid runoff is likely to reach stream channels.
- Decommission roads that are no longer needed for resource management and are at risk of failure or are contributing sediment to streams, consistent with valid existing rights.

Invasive Species

Management Objectives

- Prevent the introduction of invasive species and the spread of existing invasive species infestations.
- Prevent the introduction and spread of sudden oak death (*Phytophthora ramorum*) infections.

Management Direction

- Implement measures to prevent, detect, and rapidly control new invasive species infestations.
- Use manual, mechanical, cultural, chemical, and biological treatments to manage invasive species infestations.
- Treat invasive plants and host species for invasive forest pathogens in accordance with the Records of Decision (RODs) for the Northwest Area Noxious Weed Control Program Environmental Impact Statement and the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in Oregon Environmental Impact Statement (USDI BLM 2010b).
- Apply state-of-the art, integrated pest management prescriptions for the treatment of all identified sudden oak death (*Phytophthora ramorum*) infection sites.

Lands, Realty, and Roads

Management Objectives

- Make land tenure adjustments to facilitate the management of resources and enhance public resource values.
- Provide legal access to BLM-administered lands and facilities to support resource management programs.
- Provide needed rights-of-way, permits, leases, and easements over BLM-administered lands in a manner that is consistent with Federal and State laws.
- Protect lands that have important resource values or substantial levels of investment by withdrawing them, where necessary, from the implementation of nondiscretionary public land and mineral laws.

- Provide a road transportation system that serves resource management needs (administrative/commercial) and casual use needs (recreational/domestic) for both BLM-administered lands and adjacent privately owned lands.

Management Direction

- Retain lands in Land Tenure Zone 1 (Zone 1) under BLM administration. Lands in Zone 1 include existing and future—
  - Designated and suitable Wild and Scenic River corridors;
  - Wilderness Areas;
  - Wilderness Study Areas;
  - National Trail management corridors;
  - District-Designated Reserve – Lands Managed for their Wilderness Characteristics
  - Areas of Critical Environmental Concern (including Research Natural Areas and Outstanding Natural Areas);
  - Congressionally designated Outstanding Natural Areas; and
  - Lands acquired with Land and Water Conservation Funds.
- Make lands in Land Tenure Zone 2 (Zone 2) available for exchange to enhance public resource values, improve management capabilities, or reduce the potential for land use conflict. Zone 2 lands consist of all lands not listed in the descriptions of the other two Land Tenure Zones.
- Make lands in Land Tenure Zone 3 (Zone 3) available for disposal (identified in **Appendix D**) using appropriate disposal mechanisms. These lands include—
  - Lands that are either not practical to manage, or are uneconomical to manage (because of their intermingled location and non-suitability for management by another Federal agency);
  - Survey hiatuses; and
  - Unintentional encroachments.
- Assign to Zone 3 survey hiatuses and unintentional encroachments discovered in the future.
- Assign to Zone 3 patented lands with reversionary interests reserved by the United States that are relinquished back to Federal ownership.
- Assign to Zone 3 land boundary adjustments due to river movement discovered in the future, which meets the disposal criteria defined in **Appendix D**.
- The BLM may dispose of lands designated in Zones 2 and 3 that provide habitat for ESA-listed species, including critical habitat, only following consultation with the U.S. Fish and Wildlife Service or National Marine Fisheries Service and upon a determination that such action is consistent with relevant law and maximizes public resource values.
- As required by the Oregon Public Lands Transfer and Protection Act (Pub. L. 105-321), do not reduce through disposal, exchange, or sale the acres of O&C lands of all classifications, and the acres of O&C and public domain lands that are available for harvesting.
- Acquire or dispose of lands to facilitate resource management objectives as opportunities occur. See the Land Tenure Adjustment Criteria section in **Appendix D**.
- Make available for disposal the public domain lands in Zones 2 and 3 that have been classified under Section 7 of the Taylor Grazing Act.
- Manage newly acquired lands for the purpose for which they were acquired or in a manner that is consistent with management objectives for adjacent BLM-administered lands or other

BLM-administered lands having similar resource values. See Acquisition Criteria section in **Appendix D**.

- Where the BLM has administrative responsibility on lands managed by other agencies, the BLM will administer those lands in accordance with interagency agreements.
- Issue permits, as identified under the FLPMA (Section 302), for a variety of uses, such as, but not limited to, stockpile and storage sites and as tools to authorize unintentional trespass situations pending final resolution.
- Do not issue land use authorizations for landfills or other waste disposal facilities.
- Use land-use authorizations to resolve agricultural or occupancy trespasses, where appropriate.
- Recognize existing rights-of-way, permits, leases, and easements as valid uses.
- Limit withdrawals to the area needed and restrict only those activities needed to accomplish the purposes of the withdrawal.
- Process formal land withdrawals being relinquished by the BLM or other Federal agency according to the procedures stated under 43 CFR 2372. If the lands are found suitable for return to the public domain, the revocation order will recommend the management prescriptions developed in the environmental review. Manage the lands according to management prescriptions for those lands having the same or similar resource values in the same general area of the land withdrawal.
- Right-of-way exclusion areas include (see **Map D-1**)—
  - Lands designated as Wilderness;
  - District-Designated Reserve – Lands Managed for their Wilderness Characteristics;
  - Wilderness Study Areas;
  - Designated and suitable Wild and Scenic Rivers classified as Wild; and
  - Visual Resource Management Class I areas.

  In right-of-way exclusion areas, do not grant rights-of-way, except when mandated by law.
- Right-of-way avoidance areas include (see **Map D-1**)—
  - Areas of Critical Environmental Concern (including Research Natural Areas and Outstanding Natural Areas);
  - Recreation Management Areas (Special and Extensive);
  - Designated and suitable Wild and Scenic Rivers classified as Scenic and Recreational; and
  - Visual Resource Management Class II areas not included in right-of-way exclusion areas.

  In right-of-way avoidance areas, grant rights-of-way only if the BLM determines that the right-of-way proposals are compatible with the protection of the values for which the land use was designated, or when no feasible alternative route or designated right-of-way corridor is available as applicable with BLM laws and policy.
- Grant rights-of-way in utility corridors as the preferred location for energy transmission or distribution facilities. Corridors would generally be 1,000 feet on each side of the centerline. Grant the rights-of-way as the minimum necessary to accommodate a specific request. Do not permit development or management activities that would conflict with the construction, operation, or maintenance of facilities corresponding to the purpose of the utility corridor.
- Construct communication facilities on existing developed communication sites where they do not conflict with other management objectives. Require a site plan for applications for communication facilities on undeveloped communication sites (**Appendix D**, **Table D-10** through **Table D-13**).

- Expand existing communication sites and develop new sites. Prioritize the use of existing sites and facilities for accommodating the need for additional capacity.
- Construct new permanent or temporary roads, which may include major culverts and bridges, where needed to meet resource management objectives, to established BLM engineering design standards. Apply road location, design, and construction BMPs as needed (**Appendix C**).
- Maintain existing roads, including major culverts and bridges, to provide access for both resource management and casual use activities while protecting water quality and facility investments, and providing user safety, to established BLM maintenance standards. Apply road maintenance and wet weather road use BMPs as needed (**Appendix C**).
- Remove hazard and downed trees along roads for safety or operational reasons.
- Fully decommission or obliterate (permanent closure) roads with no future resource management need. Decommission (long-term closure) roads not currently needed for resource management but that will be used and maintained again in the future. Apply road closure BMPs as needed (**Appendix C**). Close roads only with the approval of affected permittees consistent with valid existing rights.

Livestock Grazing

Management Objectives

- Provide for livestock grazing consistent with other resource objectives while maintaining or improving the health of public rangelands.
- Prevent livestock from causing trampling disturbance to fish spawning beds where ESA-listed or Bureau Sensitive species occur.

Management Direction (All Districts)

- Authorize livestock grazing through management agreements, non-renewable grazing permits or leases, or special use permits on lands not available for livestock grazing through the issuance of a grazing lease or permit to control invasive plants, reduce fire danger, or accomplish other management objectives.
- Restrict livestock from streams with ESA-listed or Bureau Sensitive fish species during spawning, incubation, and until 30 days following the emergence of juveniles from spawning areas.

Management Direction (Coos Bay District)

- Lands within the grazing allotments identified on **Table 10** will not be available for livestock grazing through the issuance of a grazing lease. The BLM will not authorize grazing under Section 15 of the Taylor Grazing Act.[32] The BLM may authorize grazing through

[32] The Taylor Grazing Act of 1934, as amended, (43 U.S.C. 315 *et seq.*), authorizes the Secretary of the Interior "to establish grazing districts, or additions thereto and/or to modify the boundaries thereof of vacant, inappropriate and unreserved lands from any part of the public domain . . . which in his opinion are chiefly valuable for grazing and raising forage crops[.] . . ." The Act also provides for classification of lands for particular uses.

management agreements, nonrenewable grazing permits or leases, or special use permits consistent with the grazing regulations.

Table 10. Allotments unavailable for livestock grazing, Coos Bay District.

Allotment Name	Allotment Number	Public Land (Acres)	Forage Allocation (AUMs)
Bullock	20006	6	12
Kellogg	20007	2	6
Middle Creek	20001	5	5
New River	30001	530	97
	Totals	**543**	**120**

Minerals

Management Objectives

- Manage the development of leasable (including conventional and non-conventional hydrocarbon resources) minerals, locatable mineral entry, and salable mineral material disposal in an orderly and efficient manner.
- Maintain availability of mineral material sites needed for development and maintenance of access roads for forest management, timber harvest, local communities, rights-of-way for energy production and transmission, and other uses.

Management Direction

- Pursuant to 43 CFR 3809.11(c)(6), the BLM is creating two exceptions to the requirement that a Plan of Operations is required for any mining activities that are greater than casual use (such as notice-level operations) when the activities are located within lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat. An operator is not required to submit a Plan of Operations for notice-level activities in the following two situations:
    - When pursuant to Section 7 of the ESA, the BLM determines that the notice-level activity will have no effect on federally proposed or listed threatened or endangered species or their proposed or designated critical habitat.
    - When the BLM has completed consultation to the extent required under Section 7(a)(2) of the ESA and the U.S. Fish and Wildlife Service or National Marine Fisheries Service has concurred with the BLM's finding that the notice-level activity is not likely to adversely affect federally proposed or listed threatened or endangered species or their proposed or designated critical habitat.
- A Plan of Operations will be required for mining proposals that the BLM determines would be likely to adversely affect federally proposed or listed threatened or endangered species or their proposed or designated critical habitat.
- Proposals that require a Plan of Operations and are located within lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat continue to be governed by the standards in 43 CFR 3809 *et seq*.

- Pursuant to 43 CFR 3809.31(b)(2), the operator must contact the BLM before beginning operations that involve the use of a suction dredge to determine whether the operator needs to submit a notice or a plan to BLM, or whether the activities constitute casual use. It is the operator's burden to determine the location of their activity relative to the location of lands or waters that contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat, in light of the operator's potential liability under Section 9 of the ESA.
    - Suction dredging activity proposed within lands or waters that contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat, regardless of the level of disturbance, must not begin until the BLM has completed consultation to the extent required under Section 7(a)(2) of the ESA.
- Energy and mineral development can occur concurrently with some resource uses.

Leasable Minerals: Oil, Gas, or Coalbed Natural Gas Resources[33]

- Maintain all lands as open to leasable mineral development except where closed by legislation.
- Apply site-specific stipulations, such as no surface occupancy or conditional surface uses, based on resource protection needs in—
    - Designated and suitable Wild and Scenic River segments (where not already closed by legislation);
    - National Trail management corridors;
    - District-Designated Reserve – Lands Managed for their Wilderness Characteristics;
    - Areas of Critical Environmental Concern (including Research Natural Areas and Outstanding Natural Areas where not already closed by legislation); and
    - Recreation Management Areas (Special Recreation Management Areas/Extensive Recreation Management Areas).
- Apply site-specific stipulations as needed to protect ESA-listed species and their critical habitats.

Locatable Minerals

- Recommend for withdrawal from locatable mineral entry—
    - Designated and suitable Wild and Scenic River segments (where not already closed by legislation);
    - National Trail management corridors; and
    - District-Designated Reserve – Lands Managed for their Wilderness Characteristics.
- Recommend for withdrawal from locatable mineral entry Special Recreation Management Areas and Extensive Recreation Management Areas when mineral entry is not compatible with meeting recreation objectives or maintaining recreation setting characteristics.
- Recommend for withdrawal from locatable mineral entry Areas of Critical Environmental Concern with identified special management needs associated with locatable mineral entry (**Appendix F**).
- Retain all other areas not congressionally or secretarially withdrawn as open for locatable mineral entry.

[33] The Sustainable Energy section addresses Geothermal Resources.

Salable Minerals

- Areas closed to salable mineral material disposal include (see **Map E-1**)—
  - Designated and suitable Wild and Scenic River segments (where not already closed by legislation);
  - National Trail management corridors; and
  - District-Designated Reserve – Lands Managed for their Wilderness Characteristics.
- Areas closed to salable mineral material disposal include Special Recreation Management Areas and Extensive Recreation Management Areas where salable mineral material disposal is not compatible with meeting recreation objectives or maintaining recreation setting characteristics.
- Areas closed to salable mineral material disposal include Areas of Critical Environmental Concern where salable mineral material disposal is not compatible with identified special management needs (**Appendix F**).
- Maintain all other areas not closed through legislation as open to salable mineral material disposal.
- Appendix M of the Proposed RMP/Final EIS (USDI BLM 2016) provides a trends analysis that will be applied to disposals.

Paleontological Resources

Management Objectives

- Protect and preserve significant localities from natural or human-caused deterioration or potential conflict with other resources.
- Provide appropriate scientific, educational, and recreational uses, such as research and interpretive opportunities, for paleontological resources.

Management Direction

- Protect all paleontological resources through avoidance or other protection measures, consistent with BLM Handbook 8270-1 – General Procedural Guidance for Paleontological Resource Management (USDI BLM 1998, pp. Chapter III).
- Conduct public education, outreach activities, and develop materials to educate the public on paleontological resources existing within the decision area.

Rare Plants and Fungi

Management Objectives

- Provide for conservation and contribute toward the recovery of plant species that are ESA-listed or candidates.
- Support the persistence and resilience of natural communities, including those associated with forests, oak woodlands, shrublands, grasslands, cliffs, rock outcrops, talus slopes,

meadows, and wetlands. Support ecological processes and disturbance mechanisms to allow for a range of seral conditions.
- Provide for the conservation of Bureau Special Status plant and fungi species.
- Support the persistence and resilience of oak species within oak woodlands and within mixed hardwood/conifer communities.

Management Direction

- Manage ESA-listed species consistent with recovery plans, conservation agreements, species management plans, and designated critical habitat, and species-specific or project-specific conservation measures developed with the U.S. Fish and Wildlife Service, including the protection and restoration of habitat, altering the type, timing, and intensity of actions, and implementing other strategies designed to recover populations of species.
- Manage ESA candidate and Bureau Sensitive species consistent with any conservation agreements or strategies including the protection and restoration of habitat, alteration of the type, timing, and intensity of actions, and other strategies designed to conserve populations of the species.
- Manage habitat to maintain populations of ESA-listed, proposed, and candidate plant species.
- Prior to implementing actions (other than fire management operations in response to unplanned ignitions or escaped prescribed fires) that could result in habitat modification or species disturbance in the suitable habitat of any ESA-listed, proposed, or candidate plant species, or Bureau Sensitive plant species, conduct surveys to determine species presence. Utilize information on known sites of ESA-listed plants when conducting fire management operations that could result in habitat modification or species disturbance. In addition to pre-project surveys, conduct additional surveys on BLM-administered lands for ESA-listed, proposed, and candidate plant species within suitable habitat as needed to find new populations.
- Maintain or restore natural processes, native species composition, and vegetation structure in natural communities through actions such as applying prescribed fire, thinning, removing encroaching vegetation, treating non-native invasive species, retaining legacy components (e.g., large trees, snags, and down logs), maintaining water flow to wetlands, and planting or seeding native species.
- When re-vegetating degraded or disturbed areas, utilize locally adapted seeds and native plant materials appropriate to the location and site-specific conditions, and meeting management objectives for vegetation management and restoration activities. Use seeds and plant materials that are genetically appropriate and native to the plant community or region, to the extent practicable.
- Manage mixed hardwood/conifer communities to maintain and enhance oak (*Quercus* spp.) persistence and structure by removing competing conifers, thinning, and prescribed fire, to the extent consistent with management direction for the land use allocation.
- Manage mixed conifer communities to maintain and enhance ponderosa, Jeffrey, and sugar pine persistence and structure by removing competing conifers, thinning, and applying prescribed fire, to the extent consistent with management direction for the land use allocation.

- Create new and augment existing populations of ESA-listed, proposed, and candidate plant species and Bureau Sensitive plant and fungi species to meet recovery plan or conservation strategy objectives.

Recreation and Visitor Services

Management Objectives

- Provide a diversity of quality recreational opportunities.
- Meet legal requirements for visitor health and safety and mitigate resource user conflicts.
- Mitigate recreational impacts on natural and cultural resources. In land use allocations where management of other resources is dominant, provide recreational opportunities where they can be managed consistent with the management of these other resources.
- Develop new recreation opportunities to address recreation activity demand created by growing communities, activity groups, or recreation-tourism if—
  - Recreation development is consistent with interdisciplinary land use plan objectives; and
  - The BLM has secured commitments from partners (e.g., a cooperative management agreement, adopt-a-trail agreement, and memorandum of understanding).

Management Direction

- Manage Special Recreation Management Areas and Extensive Recreation Management Areas, identified in **Appendix G**, in accordance with their planning frameworks.
- Protect recreation setting characteristics within Special Recreation Management Areas to prohibit activities that would degrade identified characteristics.
- Pursue and prioritize public access to BLM-administered lands that have high recreational potential consistent with BLM designations and allocations.
- Allow for hunting as regulated by the Oregon Department of Fish and Wildlife.
- Allow the discharge of firearms for recreational target shooting on BLM-administered lands, outside areas with firearm use restrictions described in the RMA frameworks (**Appendix G**), if the firearm is discharged toward a proper backstop sufficient to stop the projectile's forward progress.
- Issue discretionary Special Recreation Permits for a variety of uses that are consistent with resource and program objectives.
- Issue vending permits that complement visitor use or contribute to resource protection.
- Monitor activity participation and recreation setting characteristics annually during the primary use season of June through October.
- Use recreation management tools such as establishing an allocation system, applying group size limits for private and commercial recreation use, or implementing seasonal closures, if monitoring indicates that social recreation setting characteristics are not being protected, resource damage is occurring, or user conflicts need to be addressed.
- Develop and maintain partnerships with recreation-based organizations and service providers. These partnerships should engage partners in the planning, implementation and monitoring of recreation opportunities and facilities on BLM-administered public lands.

Recreation and Visitor Services – Significant Caves[34]

Management Objective

- Manage significant caves to allow for appropriate access while protecting pristine and fragile resources, wildlife values, scientific and research values, and visitor safety.

Management Direction

- Manage significant caves to maintain the current level of remoteness from motorized and mechanized vehicles and to preserve the natural appearance of the cave. Prohibit construction of new facilities, roads, or trails to access the caves. Allow minor modifications (e.g., use of tape and signage and placing rescue caches) only for scientific purposes and to accommodate safe use. Maintain low evidence of use and other people.
- Manage visitor frequency, visitor numbers, and season of use through monitoring and subsequent implementation decisions described through cave management plans for each significant cave, group of caves, or complex of caves.
- Focus all management actions on specific activity outcomes for caving and research. Outcomes will be for participants to enjoy and learn about cave and karst resources. Specific benefit outcomes will be for environmental benefits, such as increased environmental stewardship, and the preservation and protection of unique biological, paleontological, archaeological, and mineralogical aspects. Social benefits will be to provide environmental education and appreciation of cave and karst systems.
- Provide appropriate access while addressing issues and concerns relating to visitor safety and preservation of the caves' values. If issues or concerns arise, apply necessary managerial controls, such as closures, permits, trip requirements, and gating. Administer and authorize research, inventory, work projects, and digging trips. Provide informational and educational materials to authorized visitors. Do not market or promote cave and karst resources.

Soil Resources

Management Objectives

- Maintain or enhance the inherent soil functions (e.g., ability of soil to take in water, store water, regulate outputs for vegetative growth and stream flow, and resist erosion or compaction) of managed ecosystems.
- Provide landscapes that stay within natural soil stability failure rates during and after management activities.

Management Direction

- Apply BMPs (**Appendix C**) as needed to maintain or restore soil functions and soil quality, and limit detrimental soil disturbance.
- Limit detrimental soil disturbance from forest management operations to a total of < 20 percent of the harvest unit area. Where the combined detrimental soil disturbance from implementation of current forest management operations and detrimental soil disturbance from past management operations exceeds 20 percent of the unit area, apply mitigation or

[34] The Federal Cave Resources Protection Act of 1988 describes significant caves.

amelioration to reduce the total detrimental soil disturbance to < 20 percent of the harvest unit area. Detrimental soil disturbance can occur from erosion, loss of organic matter, severe heating to seeds or microbes, soil displacement, or compaction.

- Avoid road construction and timber harvest on unstable slopes where there is a high probability to cause a shallow, rapidly moving landslide that would likely damage infrastructure (e.g., BLM or privately owned roads, State highways, or residences) or threaten public safety.
- Do not till soils where tillage will cause soils to become unstable due to increasing the soil moisture content.

Sustainable Energy

Management Objectives

- Develop sustainable energy resources to the maximum extent practicable without precluding other land uses.

Management Direction

- Exclude from sustainable energy development areas that are part of National Conservation Lands (e.g., Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails), Areas of Critical Environmental Concern, and District-Designated Reserve – Lands Managed for their Wilderness Characteristics.
- Site development will include practices as needed to reduce or avoid impacts to other resource uses. Appropriate practices will be applied based on site-specific conditions and include, but are not limited to, the following:
  - Control outdoor lighting with motion or heat sensors to the maximum extent practicable.
  - Use hooded outdoor lighting directed downward to minimize horizontal and skyward illumination to the maximum extent practicable.
  - Minimize the use of high-intensity lighting.
  - Establish non-disturbance buffer zones to protect sensitive habitats or areas of high risk for species of concern.
  - Control any pets of operations staff kept on-site to avoid harassment and disturbance of wildlife.
  - Use existing roads and utility corridors to the maximum extent feasible; minimize the number and length/size of new roads, lay-down areas, and borrow areas.
  - Minimize traffic volumes to the maximum extent practicable; maintain roads adequately to minimize associated impacts.
  - Install and maintain permanent fencing around electrical substations, emergency generators, and other areas potentially hazardous to human health.
  - Consolidate necessary infrastructure requirements wherever practicable, including electric power transmission lines, pipelines and market access corridors, and support utility infrastructure.
  - Keep energy conversion sites clean of debris, garbage, fugitive trash or waste, and graffiti; minimize the accumulation of scrap heaps, dumps, and storage yards.

- Design facilities used for sustainable energy harvesting, conversion, and transmission to discourage the perching or nesting by birds.
- Integrate facilities used for sustainable energy harvesting, conversion and transmission with the surrounding landscape including minimizing the profile of ancillary structures, burial of cables, prohibition of commercial symbols, and lighting.
- Provide secondary containment for all on-site hazardous materials and waste storage, including fuel.

Sustainable Energy – Biomass Energy Development

Management Objectives

- *See Sustainable Energy management objectives.*

Management Direction

- Offer slash in excess of soil stabilization needs as biomass energy feedstock.

Sustainable Energy – Wind Energy Development

Management Objectives

- *See Sustainable Energy management objectives*

Management Direction

- Site development will include practices as needed to reduce or avoid impacts to other resource uses. Appropriate practices will be applied based on site-specific conditions and include, but are not limited to, the following:
  - Lock turbine tower access doors to limit public access.
  - Locate turbines away from landscape features known to attract raptors.
  - Locate turbines away from colonies where bats hibernate, breed, and raise their young; locate turbines outside of bat migration corridors or flight paths between colonies and feeding areas
  - Encompass specific design elements for turbine arrays and turbine design including visual uniformity, use of tubular towers, proportion and color of turbines, non-reflective paints, and prohibition of commercial messages on turbines.
  - Repair, replace, or remove inoperative turbines in a timely manner.
  - Exclude designated areas that are part of National Conservation Lands (e.g., Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails) and Areas of Critical Environmental Concern from wind energy site monitoring and testing and development.
  - Incorporate wildlife-compatible design standards when fencing is necessary.
  - Avoid the use of guy wires on communication towers and meteorological towers at wind energy project sites.
  - Keep the installation of meteorological towers on a project site to a minimum; do not locate these towers in sensitive habitats or in areas where ecological resources known to be sensitive to human are present.

- Light only a portion of the turbines within a wind project; fix all pilot warning lights to fire synchronously.
- Do not add any wildlife habitat enhancements or improvements (e.g., ponds, guzzlers, rock piles, brush piles, bird nest boxes, nesting platforms, wildlife food plots) that would attract small mammals to wind energy facilities.
- Use only shielded, separated, or insulated electrical conductors that minimize electrocution risk to avian wildlife.

Sustainable Energy – Geothermal Energy Development

Management Objectives

- *See Sustainable Energy management objectives.*

Management Direction

- Site development will include practices as needed to reduce or avoid impacts to other resource uses. Appropriate practices will be applied based on site-specific conditions and include, but are not limited to, the following:
  - Minimize impacts to livestock operations from geothermal energy drilling and development.
  - Incorporate certified weed-free mulch into the reclamation of the land disturbed during the development of geothermal resources.
  - Raise above-ground piping on-site for sufficient wildlife passage.
  - Isolate any liquid that is at elevated temperatures or contains contaminants that are toxic or harmful to fur or feathers from wildlife access with fencing, netting or complete enclosure.

Sustainable Energy – Sustainable Energy Transmission Corridors

Management Objectives

- *See Sustainable Energy management objectives.*

Management Direction

- Site development will include practices as needed to reduce or avoid impacts to other resource uses. Appropriate practices will be applied based on site-specific conditions and include, but are not limited to, the following:
  - Site overhead lines away from areas where bird crossings are frequent.
  - Mark overhead lines in accordance with Avian Power Line Interaction Committee collision guidelines.
  - Install overhead lines such that the conductors parallel tree lines, employ bird flight diverters, or are otherwise screened so that bat and bird collision risk is reduced.
  - Where pipeline right-of-way clearings can be incorporated into a strategic system of fire breaks, make clearings sufficiently wide to be effective as fire breaks.
  - Raise pipelines constructed above ground sufficiently high enough to allow wildlife passage where needed and avoid potential alterations to predator/prey dynamics.

Trails and Travel Management

Management Objectives

- Maintain a comprehensive travel network that best meets the full range of public use, resource management, and administrative access needs.
- Protect fragile and unique resource values from damage by public motorized vehicle use.
- Provide public motorized vehicle use opportunities where appropriate.

Management Direction

- Prohibit public motor vehicle travel within areas designated as *closed* for public motorized access. Where the BLM has public access, allow public access by means other than motorized vehicle, such as mechanized or non-motorized use. Allow travel required for valid existing rights.
- Restrict public motorized vehicle travel within areas designated as *limited* for public motorized access. Until completion of implementation-level travel management planning, limit public motorized vehicle travel to existing routes where the BLM has public access. After completion of implementation-level travel management planning, limit public motorized vehicle travel in conformance with the resultant Travel Management Plan. Allow travel required for valid existing rights.
- Develop public motorized and non-motorized travel routes and trails in a manner designed to minimize conflicts between public motorized vehicle use and other existing (or proposed) recreational uses of the same, or neighboring, public lands. Design in a manner to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.
- Manage public motorized vehicle use in Recreation Management Areas (Special Recreation Management Area/Extensive Recreation Management Area) according to interim management guidelines until subsequent comprehensive implementation-level travel management plans are completed.
- Develop closed or abandoned roads to provide additional public motorized and non-motorized trail opportunities, where feasible and compatible with other resource objectives.

Visual Resource Management

Management Objectives

- Protect scenic values on public lands where visual resources are an issue or where high-value visual resources exist.
- Prohibit activities that would disrupt the existing character of the landscape in Visual Resource Management Class I areas.
- Retain the existing character of the landscape in Visual Resource Management Class II areas.
- Partially retain the existing character of the landscape in Visual Resource Management Class III areas.
- Allow for major modification of the existing character of the landscape in Visual Resource Management Class IV areas.

Management Direction

- Only allow activities that are found to meet visual management objectives using the Visual Resource Contrast Rating system.
- Visual Resource Management Class I includes—
  - Wilderness Areas;
  - Wilderness Study Areas; and
  - Designated and suitable Wild and Scenic Rivers that are classified as Wild.

  Manage Visual Resource Management Class I areas in accordance with natural ecological changes. Prohibit activities that would lower the Visual Resources Inventory class of Visual Resource Management Class I areas. The level of change to the characteristic landscape will be very low and will not attract attention. Changes will repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.
- Visual Resource Management Class II includes—
  - Designated and suitable Wild and Scenic Rivers that are classified as Scenic;
  - Eligible Wild and Scenic Rivers that are classified as Scenic outside of the Harvest Land Base;
  - National Trail management corridors;
  - District-Designated Reserve – Lands Managed for their Wilderness Characteristics;
  - Special Recreation Management Areas that fall within the Primitive and Backcountry category of the Recreation Opportunity Spectrum; and
  - Areas of Critical Environmental Concern in Visual Resource Inventory Class II outside of the Harvest Land Base.

  Manage Visual Resource Management Class II areas for low levels of change to the characteristic landscape. Management activities will be seen but will not attract the attention of the casual observer. Changes will repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.
- Visual Resource Management Class III includes—
  - Designated, suitable, and eligible Wild and Scenic Rivers that are classified as Recreational;
  - Eligible Wild and Scenic Rivers that are classified as Scenic within the Harvest Land Base;
  - Special Recreation Management Areas and Extensive Recreation Management Areas that fall within the Middle country category of the Recreation Opportunity Spectrum; and
  - Areas of Critical Environmental Concern in Visual Resource Inventory Class III, and in Visual Resource Inventory Class II inside the Harvest Land Base.

  Manage Visual Resource Management Class III areas for moderate levels of change to the characteristic landscape. Management activities will attract attention but will not dominate the view of the casual observer. Changes will repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.
- Visual Resource Management Class IV includes all lands that are not designated as Visual Resource Management Classes I, II, or III. Manage Visual Resource Management Class IV areas for high levels of change to the characteristic landscape. Management activities may dominate the view and will be the major focus of viewer attention.

Wildlife

Management Objectives

- Conserve and recover species that are ESA-listed, proposed, or candidates, and the ecosystems on which they depend.
- Implement conservation measures that reduce or eliminate threats to Bureau Sensitive species to minimize the likelihood of and need for the ESA listing of these species.
- Conserve or create habitat for species addressed by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act and the ecosystems on which they depend.

Management Direction

- Manage habitat for species that are ESA-listed, or are candidates for listing, consistent with recovery plans, conservation agreements, and designated critical habitat.
- Implement conservation measures to mitigate specific threats to Bureau Sensitive species during the planning of activities and projects. Conservation measures include altering the type, timing, location, and intensity of management actions.
- Utilize information on known sites of ESA-listed wildlife when conducting fire management operations that could result in habitat modification or species disturbance.
- Manage naturally occurring special habitats to maintain their ecological function, such as seeps, springs, wetlands, natural ponds, vernal pools/ponds, natural meadows, rock outcrops, caves, cliffs, talus slopes, mineral licks, oak savannah/woodlands, sand dunes, and marine habitats.
- Manage human-made special habitats as wildlife habitat when compatible with their engineered function, such as bridges, buildings, quarries, pump chances/heliponds, abandoned mines, and reservoirs, to the extent practicable consistent with safety and legal requirements.
- Prior to implementing actions that could result in habitat modification or species disturbance in habitat for the Fender's blue butterfly, Oregon silverspot butterfly, Taylor's checkerspot butterfly, streaked horned lark, Lower Columbia River distinct population segment of Columbian white-tailed deer, or western snowy plover, conduct surveys to determine species presence.
- Manage Fender's blue butterfly, Oregon silverspot butterfly, Taylor's checkerspot butterfly, streaked horned lark, Lower Columbia River distinct population segment of Columbian white-tailed deer, and western snowy plover consistent with recovery plans, conservation agreements, designated critical habitat, and species-specific and project-specific conservation measures developed with the U.S. Fish and Wildlife Service. Do not approve, fund, or implement actions that would adversely affect the Fender's blue butterfly, Oregon silverspot butterfly, Taylor's checkerspot butterfly, streaked horned lark, Lower Columbia River distinct population segment of Columbian white-tailed deer, or western snowy plover, except when done in accordance with an approved recovery plan, conservation agreement, species management plan, survey and monitoring protocol, or critical habitat rule, and when the action is necessary for the conservation of the species.
- Manage designated critical habitat for the western snowy plover consistent with recovery plans, conservation agreements, designated critical habitat, and species-specific and project-specific conservation measures developed with the U.S. Fish and Wildlife Service. Do not approve, fund, or implement actions that would adversely affect the designated critical

habitat of the western snowy plover, except when done in accordance with an approved recovery plan, conservation agreement, species management plan, survey and monitoring protocol, or critical habitat rule, and when the action is necessary for the conservation of the species.

Wildlife – Bald and Golden Eagles

- Protect known bald eagle or golden eagle nests (including active nests and alternate nests) and bald eagle winter roosting areas. Prohibit activities that will disrupt bald eagles or golden eagles that are actively nesting.
  - Continue routine use and maintenance of existing roads and other facilities.
  - Do not remove overstory trees within 330 feet of bald eagle or golden eagle nests, except for removal of hazard trees.
  - Do not conduct timber harvest operations (including road construction, tree felling, and yarding) during the breeding season within 660 feet of bald eagle or golden eagle nests. Decrease the distance to 330 feet around alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, or after eggs laid in another nest within the territory have hatched.
  - Prohibit operation of off-highway vehicles within 330 feet of bald eagle or golden eagle nests during the breeding season. In areas without forest cover or topographic relief to provide visual and auditory screening, prohibit operation of off-highway vehicles within 660 feet of bald eagle or golden eagle nests during the breeding season.
  - Prohibit activities that will disrupt roosting bald eagles or golden eagles at communal winter roosts.

Wildlife – Bats

- Protect known maternity colonies and hibernacula for Bureau Sensitive bat species within caves, abandoned mines, bridges, and buildings with a 250-foot buffer:
  - Maintain existing habitat conditions and protect the site from destruction or species disturbance, to the extent practicable consistent with safety and legal requirements.
  - Prohibit blasting.
  - Implement hazard fuel reduction treatments to protect the site from wildfire or to maintain site conditions conducive to the colony.
- Prohibit blasting during periods of reproduction and hibernation within 1 mile of known maternity colonies and hibernacula for Bureau Sensitive bat species within caves, abandoned mines, bridges, and buildings.
- Where white-nose syndrome is found in the bats residing within caves and abandoned mines, bridges, and buildings, prohibit human access except for monitoring, education, or research purposes.

Wildlife – Deer or Elk Management Areas (Salem District)

- Restrict motor vehicle use within designated deer or elk management areas between November 1 and April 15. Allow administrative use of roads, as needed, on a year-round basis.

- Plant native forage species along roadsides, skid trails, and on disturbed areas, or create forage plots where forage for deer or elk is limited within designated deer or elk management areas.

Wildlife – Fisher

- Do not approve, fund, or carry out actions that would disrupt normal fisher behaviors (e.g., foraging, resting, or denning) associated with known natal or maternal denning sites, except when done in accordance with an approved recovery plan, conservation agreement, species management plan, survey and monitoring protocol, or critical habitat rule, and when the action is necessary for the conservation of the species.
- Manage known natal or maternal denning sites in a manner that would not adversely affect fisher except when taking actions that are necessary to treat or protect stands from sudden oak death. Take actions necessary to treat or protect stands from sudden oak death, including actions that may adversely affect denning fisher. For actions other than those necessary to treat or protect stands from sudden oak death, do the following within stands where fisher natal or maternal denning or dens are documented by the BLM based on BLM field verification (such as surveys, radio-collared fisher tracking, or cameras):
  - Maintain ≥ 80 percent canopy cover within at least 50 feet of documented fisher natal and maternal dens.
  - Maintain sufficient canopy cover on the remainder of the stand to support fisher denning post-project.
  - Protect fisher denning structures ≥ 24" diameter (snags, down woody material, and live trees with cavities) within the stand. In this context, **protect fisher denning structures** means to retain the ≥ 24" diameter structures (i.e., snags, down woody material, and live trees with cavities) in the stand and if, for safety concerns, it is necessary to fall such snags or live trees with cavities, retain those cut trees or snags in the stand as additional down woody material.
  - Do not apply vegetation treatments to all portions of the stand.
- Within 5th field-watersheds (HUC 10) where fisher are documented by the BLM to occur, favor retaining trees that have structures (e.g., cavities, mistletoe, and rust brooms) that are typically used as denning or resting sites by fisher.
- The above management direction may be modified for specific projects through implementation-level NEPA analysis on a case-by-case basis in conference or consultation with the U.S. Fish and Wildlife Service based on new information.

Wildlife – Gray Wolf

- Restrict activities that create noise or visual disturbance(s) above ambient conditions within one mile of known active gray wolf dens from April 1 to July 15.

Wildlife – Marbled Murrelet

- Except as stated under Option 3, below, and except when needed to protect human safety and property, prohibit activities that disrupt[35] marbled murrelet nesting at occupied sites

[35] Disruption is a type of disturbance that that creates the likelihood of injury to ESA-listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or

when conducting activities within all land use allocations within 35 miles of the Pacific Coast and when conducting activities within reserved land use allocations between 35-50 miles of the Pacific Coast.

- Before modifying nesting habitat or removing nesting structure in (1) all land use allocations within 35 miles of the Pacific Coast, and (2) Late-Successional Reserve and Riparian Reserve between 35–50 miles from the Pacific Coast and outside of exclusion Areas C and D (shown in **Figure 2**), assess the analysis area for **marbled murrelet nesting structure**.[36] The analysis area consists of the proposed project and lands within 726 feet[37] of the project boundary. The analysis area includes all nesting structures that could be affected by habitat modification.

    - If the analysis area contains no nesting structure, no further consideration of marbled murrelet habitat is required.

    - Before modifying forest stands in any 5-acre portion (using a 5-acre moving circle) of the analysis area that contains at least 6 trees with nesting structure, implement Option 1, 2, or 3.

        Option 1. Survey for the marbled murrelet using a protocol with a defined methodology and a resultant probability of detection:
        - If no occupancy is determined, no further consideration of marbled murrelet habitat is required.
        - If occupancy is determined, do not conduct activities within the **occupied stand**[38] and all forest within 300 feet of the occupied stand.
        - The following are exceptions that may be implemented as long as the stand continues to support nesting:
            - Felling of hazard trees and trees for instream restoration projects

sheltering (see 50 CFR 17.3). An action that would disrupt the normal behavior of an ESA-listed species may affect, and would be likely to adversely affect, the species and would cause the taking of affected individual(s). In contrast, disturbance is a human action that may affect an ESA-listed animal species by the addition, above ambient condition, of noise or human intrusion, or the mechanical movement of habitat (e.g., the shaking of the forest canopy from helicopter rotor wash). Disturbance is temporary/short term (minutes to days) and does not modify habitat structure, or water/air flow or quality. (Disturbance should not be confused with "surface disturbance," which refers to an action that modifies soil, water, or vegetation). Disturbance requires the presence of an ESA-listed animal. Disruption is a subset of disturbance.

[36] **Marbled murrelet nesting structure** is a conifer tree with all of the following characteristics (which are not always visible from the ground):

- A DBH of at least 19.1" and a height greater than 107 feet
- A nest platform at least 32.5 feet above the ground (a nest platform is a relatively flat surface at least 4" wide, with nesting substrate (e.g., moss, epiphytes, duff), and an access route through the canopy that a murrelet could use to approach and land on that platform)
- A tree branch or foliage, either on the tree with potential structure or on an adjacent tree, which provides protective cover over the platform

Note: Nesting structure does not have to be occupied by nesting marbled murrelets.

[37] The distance of 726 feet is derived from the diameter of a 5-acre moving circle (526 feet), plus an additional 200 feet in consideration of potential edge effects.

[38] Marbled murrelet **occupied stand** refers to all forest stands, regardless of age or structure, within 1/4 mile (1,320 feet) of the location of marbled murrelet behavior indicating occupancy and not separated from the location of marbled murrelet behavior indicating occupancy by more than 328 feet of non-forest.

- Construction of linear and nonlinear rights-of-way, spur roads, yarding corridors, or other facilities
- As needed to protect the overall health of the **occupied stand**, the following activities would be implemented as long as the stand continues to support nesting:
  - Wildfire suppression
  - Fuels reduction
  - Insect and disease control
  - Other activities to improve the health of the stand or adjacent stands

Option 2. Exclude nesting structure from the project area[39] by doing all of the following:

- Do not remove or damage nesting structure. This includes trees with nesting structure and adjacent trees with branches that interlock the branches of any tree with nesting structure.
- Do not conduct timber harvest and associated ground disturbing activities during the murrelet nesting period (April 1 – September 15) unless the U.S. Fish and Wildlife Service concurs that disturbances would not adversely affect nesting marbled murrelets.
- Maintain a 150-foot un-thinned buffer around all trees with nesting structure. Within this buffer, do not remove trees for any reason associated with timber harvest, including the placement of roads, landings, or yarding corridors. Other activities are permitted if the U.S. Fish and Wildlife Service concurs that such activities would not adversely affect nesting marbled murrelet.
- Maintain an average canopy cover of at least 60 percent post-project (averaged over each 40-acre area) in the zone between 150 feet and 300 feet of all trees with nesting structure.
- Include additional, site-specific prescriptive measures to maintain or enhance habitat conditions, as needed, in the zone between 150 feet and 300 feet from all trees with nesting structure. In this context, **maintain marbled murrelet habitat** means to maintain stand structural characteristics such that, following habitat modification, the stand could support marbled murrelet nesting.
- Maintain an average canopy cover of at least 40 percent post-project (averaged over each 40-acre area) within the project area beyond 300 feet from all trees with nesting structure.

Option 3. With concurrence from the U.S. Fish and Wildlife Service, manage nesting structure in a manner that would not adversely affect nesting marbled murrelets, except when taking actions that are necessary to treat or protect stands from sudden oak death. Take actions necessary to treat or protect stands from sudden oak death, including actions that may adversely affect nesting marbled murrelets.

- Before modifying forest stands in any 5-acre portion of the analysis area that contain 1–5 trees with nesting structure, implement Options 1, 2, 3, or 4.

[39] For the purposes of this management direction, the project area is the area directly affected by implementation of the action, such as the harvest unit for a timber sale.

Option 4. Protect nesting structure within the project area by doing all of the following:

- If the nesting structure is within 20 miles of the coast—
  - Between April 1 and August 5, stand modification would not occur;
  - Between August 6 and September 15, stand modification activities would not begin until 2 hours after sunrise and would conclude 2 hours before sunset.
- Design projects in accordance with Late-Successional Reserve management direction.
- Do not remove or damage nesting structure.
- Design habitat modifications that occur within one site-potential tree height of nesting structure to protect and improve future habitat conditions. Examples include—
  - Protecting the roots of trees with nesting structure;
  - Removing suppressed trees;
  - Removing trees that might damage nesting structure during wind storms; or
  - Removing trees that compete with key adjacent trees that are, or will be, providing cover to potential nest platforms.
- Implement management actions that aid development of limbs and adjacent cover.
- Prohibit the creation of any opening (i.e., a gap ≥ 0.25 acre in size) within a distance equal to one site-potential tree height of nesting structure.

Wildlife – Northern Spotted Owl

- Manage habitat conditions for northern spotted owl movement and survival between and through large blocks of northern spotted owl nesting-roosting habitat.
- Do not authorize timber sales that would cause the incidental take of northern spotted owl territorial pairs or resident singles from timber harvest until implementation of a barred owl management program consistent with the assumptions contained in the Biological Opinion on the RMP has begun.

Wildlife – North Oregon Coast Distinct Population Segment of the Red Tree Vole

- Survey proposed projects within the range of the North Oregon Coast distinct population segment of the Oregon red tree vole north of Highway 20 (shown in **Figure 3**) that could degrade or remove habitat using a protocol with a defined methodology that includes detection probabilities. Habitat that requires surveys prior to modification includes stands containing Douglas-fir, grand fir, Sitka spruce, or western hemlock and meet the following:
  - Stands with a QMD ≥ 16" based on the Survey Protocol for the Red Tree Vole, Version 3.0 (Huff *et al.* 2012, p. 9) and
  - Either (a) conifer-dominated stands that are ≥ 80 years old or (b) conifer-dominated stands that have ≥ 60 percent canopy cover and have ≥ 2 **superdominant conifer trees**[40] per acre on average across the stand
- The following types of projects are exempt from the above direction to survey for red tree voles prior to project implementation:
  - Projects in stands < 80 years old
  - Culvert replacements on roads that are in use and part of the road system; culvert removals if the road is temporary or to be decommissioned
  - Riparian and stream improvement projects where the work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and flood plain reconstruction, or removal of channel diversions
  - Portions of hazardous fuels treatments where prescribed fire is applied. Any portion of a hazardous fuels treatment project involving commercial logging will remain subject to survey requirements except for projects in stands < 80 years old
- If surveys north of Highway 20 indicate red tree voles from the North Oregon Coast Distinct Population Segment occupy that habitat, establish a "habitat area" for each cluster of nests that are not isolated from one another by more than 330 feet and include at least one active nest.
  - Establish "habitat areas" at least 10 acres in size and include 1.0 acre per nest if there are more than 10 red tree vole nests (e.g., establish a 15-acre habitat area for a cluster with 15 red tree vole nests).
  - Within "habitat areas," do not remove or modify nest trees.
  - Within "habitat areas," do not create barriers or strong filters to red tree vole movement through the canopy by—
    - Maintaining at least 75 percent canopy cover within "habitat areas";
    - Retaining all nest trees (including active and inactive nest trees); and
    - Retaining trees with crowns directly interlocking the crowns of nest trees.

    Allow routine maintenance of existing infrastructure and facilities in "habitat areas" (including the felling of hazard trees) that does not meet the above criteria.
- South of Highway 20 within the North Oregon Coast Distinct Population Segment, establish and manage "habitat areas" as described above for known sites of red tree voles in the Late-Successional Reserve and Riparian Reserve.

[40] **Superdominant conifer trees** typically have crowns that extend above the general stand canopy and have large branches in the upper canopy of the dominant trees in the stand. Superdominant trees may be remnant trees from an earlier cohort, or they may be trees from the dominant cohort that were more open grown and have become much larger than the rest of the trees in the stand.

Wildlife – Pacific Coast Distinct Population Segment of the Western Snowy Plover

- Do not authorize or construct additional discretionary roads and trails within designated critical habitat or within western snowy plover habitat.
- Restore snowy plover nesting habitat.
- Restrict the timing and location of beach access or activities to avoid disruption of normal snowy plover nesting and nesting behaviors.

References

Cissel, J., P. Anderson, D. Olson, K. Puettmann, S. Berryman, S. Chan, and C. Thompson. 2006. BLM Density Management and Riparian Buffer Study: Establishment Report and Study Plan. 161 pp. http://www.blm.gov/or/districts/salem/plans/files/DMS_Study_Plan.pdf.

Huff, R., K. Van Norman, C. Hughes, R. Davis, and K. Mellen-Mclean. 2012. Survey Protocol for the Red Tree Vole, Version 3.0. Portland, OR. U.S. Department of the Interior, Bureau of Land Management, Oregon/Washington, and U.S. Department of Agriculture, Forest Service Regions 5 and 6. 52 pp. http://www.blm.gov/or/plans/surveyandmanage/files/sp-RedTreeVole-v3-0-2012-11.pdf.

USDI BLM. 1984. BLM Manual 5251 – Timber Production Capability Classification. 7 pp. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.74631.File.dat/Reformatted%205251%20Timber%20Production%20Capabability%20Classification.pdf.

---. 1998. BLM Handbook H-8270-1 – General Procedural Guidance for Paleontological Resource Management. http://www.blm.gov/style/medialib/blm/wo/Planning_and_Renewable_Resources/coop_agencies/paleontology_library.Par.78212.File.dat/h8270-1.pdf.

---. 2005a. Record of Decision: Integrated Pest Management Program, BLM Travis Tyrell Seed Orchard, Lorane, Lane County, OR. BLM Eugene District, Springfield, OR. 56 pp.

---. 2005b. Record of Decision: Integrated Pest Management Program, BLM Walter H. Horning Tree Seed Orchard, BLM Salem District, Salem, OR.

---. 2010a. BLM Forest EcoSurvey Field User Guide. Oregon State Office, Portland, OR. 105 pp. May 21, 2010. http://www.blm.gov/or/districts/salem/files/blm_ecosurvey.pdf.

---. 2010b. Records of Decision (RODs) for the Northwest Area Noxious Weed Control Program Environmental Impact Statement and the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in Oregon Environmental Impact Statement.

---. 2012a. BLM Manual 6340 – Management of Designated Wilderness. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.22269.File.dat/6340.pdf.

---. 2012b. BLM Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.38337.File.dat/6310.pdf.

---. 2016. Proposed Resource Management Plan/Final Environmental Impact Statement for the Resource Management Plans for Western Oregon—Coos Bay, Eugene, Medford, Roseburg, and Salem Districts, and the Klamath Falls Field Office of the Lakeview District. Bureau of Land Management, Portland, OR. Vol. I–IV. http://1.usa.gov/1YchHea.

USDI FWS. 2011. Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). USFWS Region 1, Portland, OR. 258 pp. http://www.fws.gov/wafwo/pdf/NSO%20Revised%20Recovery%20Plan%202011.pdf.

Appendix A – Guidance for Use of the RMP

This appendix provides guidance on how the BLM will implement actions consistent with this RMP, evaluate this RMP, and change this RMP. These descriptions, which provide background information and explanations of how the BLM will use this RMP, do not constitute additional requirements beyond the management direction described in this approved RMP. The BLM may make changes to the processes described in this background information through plan maintenance, as explained below, in that changes to processes, in and of themselves, would not expand the scope of resource uses or restrictions or change the terms, conditions, and decisions of this approved plan.

Implementation of Actions Consistent with the Approved RMP

The ROD and RMP only make decisions on lands that fall under BLM jurisdiction (including mineral estate). The major provisions of the RMP include the following land use plan decisions—

- Objectives for the management of BLM-administered lands and resources;
- Land use allocations relative to future uses for the purposes of achieving the various objectives; and
- Management direction that identifies where future actions may or may not be allowed and what restrictions or requirements may be placed on those future actions to achieve the objectives set for the BLM-administered lands and resources.

Management objectives are descriptions of desired outcomes for BLM-administered lands and resources in an RMP; the resource conditions that the BLM envisions or desires would eventually result from implementation of actions consistent with the RMP. As such, management objectives are not rules, restrictions, or requirements by which the BLM determines which implementation actions to conduct or how to design specific implementation actions.

Land use plan decisions (land use allocations, management objectives, and management direction) do not directly authorize implementation of on-the-ground projects. Land use plan decisions guide and control future implementation decisions, which the BLM can carry out only after completion of further NEPA compliance and decision-making processes and consultation as appropriate.

Implementation decisions authorize implementation of on-the-ground projects. Examples of implementation decisions include but are not limited to the following: offering a specific tract of timber for sale, applying a vegetation treatment, approving or denying an application for a permit, issuing an individual grazing lease, designating specific roads and trails as *open* or *closed* to motorized travel,[41] or completing a specific land exchange. This approved RMP does not include any implementation decisions.

[41] The designations in the approved RMP of areas as *limited* or *closed* for public motorized access are transportation land use plan decisions and not implementation decisions. Land use plan decisions guide future land management

Revision of an RMP necessarily involves a transition from the application of the old RMP to the application of the new RMP. The planning and analysis of implementation projects typically requires several years of preparation before the BLM can reach a decision. Allowing for a transition from the old RMP to the new RMP avoids disruption of the management of the BLM-administered lands and allows the BLM to utilize work already begun on the planning and analysis of projects. The Record of Decision for this approved RMP addresses the application of the RMP to new and ongoing projects.

The analysis in the Proposed RMP/Final EIS describes the cumulative effect of anticipated actions that the BLM will implement consistent with the RMP, based on the information available to the BLM at this time and forecasting of reasonably foreseeable implementation actions consistent with the RMP. The analysis in the Proposed RMP/Final EIS will provide useful analysis, including cumulative effects analysis, to which most implementation-level analyses will tier, consistent with 40 CFR 1502.20. As the BLM plans and analyzes implementation actions, the BLM will have better and more specific information on the location, scope, and timing of proposed implementation actions, and site-specific conditions for project-level NEPA compliance.

Timber Harvest in the Harvest Land Base

The management objectives for the Harvest Land Base include offering for sale the declared ASQ of timber. The sub-allocations of the Harvest Land Base each include specific management direction to achieve this management objective. The management direction for both the Low Intensity Timber Area and the Moderate Intensity Timber Area require the BLM to conduct both regeneration harvest and commercial thinning for producing timber to contribute to the attainment of the declared ASQ, among other reasons. The BLM will determine which harvest practice, regeneration harvest or commercial thinning, to apply to any individual stand in the Harvest Land Base by evaluating stand conditions present at the time for harvest. The selection of appropriate harvest practices is at the discretion of the BLM, consistent with the management direction.

Both the Low Intensity Timber Area and the Moderate Intensity Timber Area include management direction to conduct regeneration harvest for any of several listed reasons, including producing timber to contribute to the attainment of the declared ASQ. While application of regeneration harvest will often satisfy additional listed reasons, the BLM does not need to meet multiple reasons in conducting regeneration harvest and may conduct regeneration harvest solely for producing timber to contribute to the attainment of the declared ASQ.

By the allocation of the Harvest Land Base, the BLM makes all lands within this land use allocation available for timber harvest. The BLM will conduct timber harvest on all lands within the Harvest Land Base over time, consistent with the management direction. The BLM may elect to defer harvest at particular times on particular stands in the Harvest Land Base for reasons

actions and provide guidance for subsequent site-specific implementation decisions. Designations of areas as *limited* or *closed* for public motorized access will guide use within these areas until the BLM completes implementation-level travel management planning, consistent with the BLM Travel and Transportation Handbook H-8342 (USDI BLM 2012a).

described in the management direction and this appendix. However, the BLM will not defer or forego timber harvest of stands in the Harvest Land Base for reasons not described in the management direction or this appendix. Lands deferred at any particular time for reasons described in the management direction and this appendix would still be available for future timber harvest.

The land use allocations, management direction, and the guidance in this appendix constitute the BLM's contribution towards Recovery Action 10, and the land use allocations constitute the BLM's contribution to Recovery Action 32 in the Revised Recovery Plan for the Northern Spotted Owl (USDI FWS 2011). The BLM will not defer or forego timber harvest of stands in the Harvest Land Base to contribute to Recovery Action 10 beyond the specific requirements in the management direction or the guidance in this appendix. The BLM will not defer or forego timber harvest of stands in the Harvest Land Base to contribute to Recovery Action 32.

Incidental Take of Northern Spotted Owls

The BLM will not authorize timber sales that would cause the incidental take[42] of northern spotted owl territorial pairs or resident singles from timber harvest until implementation of a barred owl management program consistent with the assumptions contained in the Biological Opinion on the RMP has begun. Implementation of a barred owl management program includes the existence of a monitoring program that would evaluate whether a barred owl program is having the biological benefits to the northern spotted owl assumed in the Biological Opinion on the RMP.

Whether a specific timber harvest would result in incidental take will be determined on a case-by-case basis. Until implementation of a barred owl management program has begun, the BLM will not authorize any timber harvest that it determines would cause incidental take of northern spotted owls or is determined to cause incidental take through a ESA Section 7 consultation process. The BLM will be authorizing timber harvest that does not result in incidental take of northern spotted owls (e.g., harvest in unoccupied home ranges or harvest within occupied home ranges that does not constitute incidental take), provided that such harvest otherwise meets BLM's obligations under ESA Section 7.

As part of the process to determine whether a planned timber harvest would result in take of northern spotted owls, the BLM will establish whether the northern spotted owl is actually present in the area that will be affected by the timber harvest using the best available science at that time, such as through pre-project northern spotted owl surveys consistent with the U.S. Fish and Wildlife Service's Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls (February 2, 2011; revised January 9, 2012). The U.S. Fish and Wildlife Service has updated the northern spotted owl survey protocol to account for the influence of barred owl and may update it in the future.

[42] The ESA defines 'take' as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" 16 U.S.C. 1532(19). The definition of harm is "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3); *Babbitt v. Sweet Home Chapter of Cmtys. for a Greater Or.*, 515 U.S. 687, 696–700 (1995).

If the BLM and the U.S. Fish and Wildlife Service jointly determine that implementation of a barred owl management program has begun, the BLM may proceed with implementation of timber harvest consistent with this approved ROD/RMP that may include incidental take of northern spotted owl territorial pairs or resident singles. Any proposed timber harvest that may include such incidental take would be implemented only after and consistent with appropriate project-level ESA Section 7 consultation and incidental take statement.

After implementation of a barred owl management program has begun, the BLM and U.S. Fish and Wildlife Service will meet as necessary, at least annually, to review the results of the monitoring program. If the BLM or the U.S. Fish and Wildlife Service conclude that the monitoring program shows that the results of such a barred owl management program are not consistent with the assumptions in the Biological Opinion, the BLM would reinitiate ESA Section 7 consultation on the RMP.

If the BLM or the U.S. Fish and Wildlife Service concludes that implementation of a barred owl management program consistent with the assumptions contained in the Biological Opinion has not begun after 5 years from the effective date of the ROD/RMP, the agencies would meet as necessary, at least annually, and evaluate whether implementation of a barred owl management program consistent with the assumptions of the Biological Opinion is reasonably certain to occur. If both the BLM and the U.S. Fish and Wildlife Service agree that such a barred owl management program is still reasonably certain to occur, the BLM would continue to not authorize timber sales that would cause the incidental take of northern spotted owl territorial pairs or resident singles from timber harvest. If the BLM or the U.S. Fish and Wildlife Service concludes that such a barred owl management program is not reasonably certain to occur, the BLM would reinitiate ESA Section 7 consultation on the RMP.

If implementation of a barred owl management program has not begun after 8 years of the effective date of the ROD/RMP, the BLM would reinitiate ESA Section 7 consultation on the RMP.

If reinitiation of ESA Section 7 consultation on the RMP is triggered for any of the reasons above, the BLM would comply with ESA Section 7(d) and would not authorize timber harvest that is likely to adversely affect the northern spotted owl or likely to adversely affect its critical habitat until consultation is complete.

After implementation of a barred owl management program has begun, the BLM will continue to seek to avoid or reduce negative impacts to northern spotted owl sites, to the extent consistent with the management objectives and management direction for the Harvest Land Base, as detailed below.

Management of Northern Spotted Owl Known Sites Associated with the Harvest Land Base[43]

Across the total planning area in 2013, an estimated 175 known sites occurred in the Harvest Land Base under the approved RMP. In addition, the Harvest Land Base under the approved RMP will contribute to the 500-acre core use areas of an additional estimated 660 known sites located in other land use allocations, and to the median provincial home range areas of another estimated 250 known sites. Thus, an estimated 1,085 known sites, or 44 percent of the known sites associated with BLM-administered lands, potentially will be affected by BLM management actions in the Harvest Land Base under the approved RMP. Given the severe biological stressors currently affecting the northern spotted owl, when designing, locating and implementing actions in the Harvest Land Base, BLM managers will[44] reduce, avoid, or delay negative impacts to northern spotted owl known sites located in the Harvest Land Base, and avoid causing the abandonment of northern spotted owl known sites located in other land use allocations, to the extent consistent with the management objectives and management direction for the Harvest Land Base.

This guidance is not intended to prevent all negative effects to known sites associated with the Harvest Land Base or the eventual loss of known sites in the Harvest Land Base. Instead, this guidance is intended to avoid or delay, to the extent consistent with the management objectives and management direction for the Harvest Land Base, near-term negative effects to known sites as northern spotted owl habitat continues to develop in the reserved land use allocations and the U.S. Fish and Wildlife Service evaluates options for barred owl management.

The following information is intended to help BLM managers implement this guidance.

Known Sites Located in the Harvest Land Base

With respect to sites currently[45] occupied by a northern spotted owl territorial pair or resident single, to the extent consistent with the management objectives and management direction for the Harvest Land Base, BLM managers will—

- Avoid management actions that would cause the abandonment of more than 10 percent of such sites during the first decade of plan implementation, more than 15 percent of such sites during the second decade of plan implementation, and more than 20 percent of such sites per decade thereafter. These thresholds are intended to reflect site abandonment caused by a

[43] As stated in the beginning of this appendix, this description, which provides background information and explanations of how the BLM will use the approved RMP, does not constitute additional requirements beyond the management direction described in this RMP. This description provides guidance for the timing or order of timber harvest in the Harvest Land Base but does not alter which lands are available for timber harvest. Guidance in this section for avoiding harvest or prioritizing harvest is in the context of those actions that are allowable consistent with the management objectives and management direction for the Harvest Land Base.

[44] As stated above, guidance in this section for avoiding harvest or prioritizing harvest is in the context of those actions that are allowable consistent with the management objectives and management direction for the Harvest Land Base. Thus, statements throughout this section about actions that the BLM will or will not take are solely explanations of how the BLM will use the approved RMP and do not constitute additional requirements beyond the management direction described in this RMP.

[45] For the purpose of this guidance, "sites currently occupied" means northern spotted owl sites that the BLM has determined are occupied at the time of implementation of the management action. The BLM will determine occupancy using the best science available at that time, such as through pre-project northern spotted owl surveys.

BLM action; they are not intended to reflect site abandonment from other causes such as displacement by barred owls or habitat losses on adjacent lands. If the BLM determines that an action would not cause the incidental taking of a territorial pair or resident single, and the U.S. Fish and Wildlife Service concurs with that determination, subsequent abandonment of a site associated with the action would not be considered as resulting from the action.

- Give priority to maintaining existing habitat conditions in the associated nest patch, 500-acre core use area and median provincial home range area, in that order of priority, to support continued site occupancy.

With respect to sites not currently occupied but known to have been occupied by a territorial pair or resident single within the past 5 years, BLM managers will give priority to maintaining existing habitat conditions in the nest patch and 500-acre core use area, and maintaining existing nesting-roosting-foraging habitat in the associated median provincial home range area, to the extent consistent with the management objectives and management direction for the Harvest Land Base. If the BLM cannot maintain all existing nesting-roosting habitat in the median provincial home range area, BLM managers would give priority to maintaining nesting-roosting habitat closest to the 500-acre core use area and maintaining at least 50 percent of the median provincial home range area as nesting-roosting-foraging habitat when all lands are considered.

With respect to sites not currently occupied, but known to have been occupied by a territorial pair or resident single within the past 10 years, BLM managers will give priority to maintaining existing habitat conditions in the nest patch and maintaining existing nesting-roosting habitat in the 500-acre core use area, or promoting the protection and development of nesting-roosting habitat in the nest patch and 500-acre core use area, to the extent consistent with the management objectives and management direction for the Harvest Land Base.

BLM managers will give priority to implementing management actions that are located outside the median provincial home range area of a site, or would affect sites not known to have been occupied by a territorial pair or resident single within the past 10 years, over actions that would affect sites that have been occupied within the past 10 years.

Known Sites Located Outside the Harvest Land Base

Across the total planning area in 2013, approximately 590 known sites in other BLM land use allocations under the approved RMP were occupied by a territorial pair or resident single within the past 5 years. In addition, if the U.S. Fish and Wildlife Service implements a barred owl management program, the BLM anticipates that northern spotted owls would reoccupy currently unoccupied habitat.

As stated above, when designing, locating and implementing actions in the Harvest Land Base, BLM managers will avoid causing the abandonment of northern spotted owl known sites located in other land use allocations, to the extent consistent with the management objectives and management direction for the Harvest Land Base.

BLM managers will give priority to actions that affect sites—

- That are not known to have been occupied by a territorial pair or resident single within the past 10 years. The longer a site has been unoccupied, the less likely it is to be re-occupied by northern spotted owls.
- That have less than 50 percent nesting-roosting-foraging habitat within the associated median provincial home range area when all land ownerships are considered. Sites with median provincial home range areas supporting less than 50 percent nesting-roosting-foraging habitat are less likely to be re-occupied by northern spotted owls until habitat conditions recover.
- With less than 50 percent of the associated median provincial home range area occurring in the Late-Successional Reserve, when all land ownerships and U.S. Forest Service reserves are considered. Sites associated with more reserved lands are more likely to be re-occupied by northern spotted owls, resist displacement by barred owls and contribute to species recovery.

BLM managers will avoid actions that—

- Occur in the nest patch of a site. Habitat modification in the nest patch will negatively affect re-occupancy of the site by northern spotted owls until habitat conditions recover.
- Cause the loss of nesting-roosting-foraging habitat in the 500-acre core use area surrounding a site. Sites with core use areas supporting less than 50 percent nesting-roosting-foraging habitat, when all land ownerships are considered, are less likely to be re-occupied by northern spotted owls until habitat conditions recover.
- Cause the amount of nesting-roosting-foraging habitat in the median provincial home range area surrounding a site to decline below 50 percent, when all land ownerships are considered.

Management of Newly Acquired Lands

Lands may come under BLM administration after approval of this RMP through exchange, donation, purchase, revocation of withdrawals to other Federal agencies, or relinquishment of Recreation and Public Purpose leases. Discretionary acquisitions (such as exchanges) would be guided by the acquisition criteria described in **Appendix D**.

The BLM would manage newly acquired or administered lands or interests in lands for the purpose for which they were acquired or in a manner that is consistent with management objectives for adjacent BLM-administered lands or other BLM-administered lands having similar resource values. For example, the BLM would typically manage acquired lands consistent with the land use allocations, management objectives, and management direction of comparable or adjacent BLM-administered lands. Newly acquired lands, regardless of status, would be subject to non-discretionary access rights provided for under the terms and conditions of most reciprocal right-of-way agreements and permits.

In accordance with Section 205 (e) of the FLPMA (Pub. L. 99-632), lands acquired by the BLM in exchange for O&C or Coos Bay Wagon Road (CBWR) lands would have the same status and be administered in accordance with the same provisions of law applicable to those lands disposed of; and those newly acquired lands would be designated as O&C or CBWR lands, as appropriate,

and managed under the sustained yield principles as prescribed in the O&C Act of August 28, 1937, and other laws applicable to the O&C or CBWR lands. Additionally, lands acquired using proceeds generated from the disposal of O&C or CBWR lands under the authority of the Federal Land Transaction Facilitation Act (Pub. L. 106-248) would also take on the same status as the lands from which the funds were generated (O&C or CBWR) and would likewise be managed in accordance with the O&C Act of August 28, 1937, and other applicable laws.

Lands acquired by the BLM that take on the status of either O&C or CBWR lands would require classification in accordance with the Chamberlain-Ferris Act of June 9, 1916, (39 Stat 218) as to power-site, timberlands, or agricultural lands. Lands classified as timberland or agriculture would be open to exploration, location, entry, and disposition under the general mining laws in accordance with the Act of April 8, 1948 (62 Stat. 162). Lands acquired by the BLM under Section 205 or 206 of the FLPMA take on the status of 'acquired lands,' and therefore would not be available for location, lease, or sale until the BLM formally opened the lands to such entry.

Land acquisitions resulting in net adjustments in the Harvest Land Base may be made without adjusting the declaration of the ASQ for sustained-yield timber production or amending this RMP, unless the cumulative effects of all changes to the Harvest Land Base indicate that the decadal amount of sustained-yield timber production would be modified by more than 10 percent of the declared ASQ for sustained-yield timber production.

Management of Future Proposed Special Areas

The BLM could receive recommendations, nominations, or identification of new special areas after the approval of this RMP, such as Areas of Critical Environmental Concern or Wild and Scenic Rivers, requiring study or evaluation for special management. The BLM would conduct reviews and evaluations of these newly proposed or identified areas under the guidance of the national programs and BLM policies applicable to their management. Where the BLM determines that values are present, the BLM would provide management to protect the values while awaiting further evaluations or designations to the extent possible under existing legal authorities. The BLM would consider the protection of any identified values through due consideration in site-specific NEPA analysis and decisions in conformance with the applicable and current agency policies, BLM manuals, and law.

Valid Existing Rights

Other Federal, State, or local government agencies, Tribes, private individuals, or companies may hold valid existing rights within the decision area. Considering the intermingled nature of the BLM-administered lands in the planning area, the BLM has granted many rights-of-way, leases, permits, and other established legal rights within the decision area over the years. Valid existing rights may pertain to timber sale contracts, mining claims, mineral or energy leases, leases, easements, permits, rights-of-way, and water rights. Perhaps the most extensive and unique rights are the reciprocal rights-of-way agreements with dozens of adjacent landowners established to provide for the logical, effective, and efficient development of access on the intermingled lands.

The decisions in this RMP will not alter or extinguish valid existing rights on BLM-administered lands. Valid existing rights take precedence over the decisions in this RMP. Authorization for implementing an action that would affect these valid existing rights may be subject to approval by the holders of valid existing rights and may not be discretionary to BLM. While the BLM may have authority to implement conditions for approval of actions implemented consistent with the approved RMP, any conditions would have to be consistent with the valid existing rights already granted or otherwise obtained. If such authorizations come up for review and can be modified by the BLM, the BLM will bring these authorizations into conformance with the approved RMP.

The decisions in the approved RMP describe procedural steps that are relevant to some valid existing rights, but do not alter or extinguish the valid existing rights. For example, the management direction in the approved RMP describes circumstances under which a Plan of Operations will be required for mining activities; such descriptions of procedural steps do not alter or extinguish any valid existing mining claims.

Adaptive Management

In some instances, management direction in the approved RMP provides for a range of activities or resource uses. In these cases, levels of activities or resource uses would vary within the range prescribed by the management direction, without the need for additional planning steps such as plan amendment. The BLM would adapt the level of activities within the range given by management direction, depending on variation in resource needs or organizational capability.

In addition to the constraints or latitude provided by management direction, the ability to adapt or change management without the use of planning steps or NEPA analyses would be restricted by how much of a departure would be from analytical assumptions in the Proposed RMP/Final EIS. This is because the BLM derived conclusions regarding environmental consequences from analytical assumptions. Analytical assumptions include such things as levels or methods of activities, number of acres treated, and miles of roads maintained.

If the need for adaptive management changes would so alter the implementation of actions consistent with the RMP that the environmental consequences would be substantially different than those anticipated in the Proposed RMP/Final EIS, then the BLM would engage in additional planning steps and NEPA procedures. The BLM planning regulations at 43 CFR 1610.5–5 state, "An amendment shall be initiated by the need to consider monitoring and evaluation findings, new data, new or revised policy, a change in circumstances or a proposed action that may result in a change in the scope of resource uses or a change in the terms, conditions and decisions of the approved plan." The BLM would make the determination as to when additional planning steps and NEPA procedures would be required through the plan evaluation process, as discussed below.

The BLM may also apply adaptive management by acting on information found through the monitoring questions (**Appendix B**). Adaptive management associated with monitoring could include corrective actions precipitated by findings of non-compliance. Corrective action precipitated by monitoring could range from simple changes in administrative procedures,

refinements of the plan through plan maintenance, or more substantive changes through plan amendment or revision, as discussed below.

Plan Evaluation

Evaluation is the process of reviewing the RMP to determine whether the BLM is implementing actions consistent with the plan decisions as expected and the associated NEPA analyses are still valid. The BLM will conduct plan evaluations at 5-year intervals. In addition to the monitoring results (**Appendix B**), the BLM will examine many of the underlying assumptions regarding levels of activities and anticipated environmental consequences at the time of the 5-year plan evaluation to determine if the plan objectives are being met or are likely to be met. The evaluation will also assess whether changed circumstances or new information have created a situation in which the expected impacts or environmental consequences of the plan are significantly different from those anticipated in the Proposed RMP/Final EIS. Through the plan evaluation, the BLM will make a finding of whether or not a plan amendment or plan revision is warranted.

The BLM could conduct unscheduled plan evaluations to address certain unanticipated events or new information that would call into question the underlying analysis and decisions of the plan.

Changes to the Approved RMP

The BLM can make changes to this RMP subsequent to the approval through plan maintenance, amendment, or revision, consistent with 43 CFR 1610.5. The appropriate mechanism for making changes to the RMP depends on the scope of the changes.

This approved RMP may contain data, typographical, mapping, or tabular errors not apparent at the time of approval. Many of the decisions in the approved RMP, such as mapping of land use allocations, are based on the BLM data available at the time of RMP approval. Given the extent and detail of the data on resource conditions that the BLM used to determine the location of the land use allocations, it is inevitable that there are some errors in that underlying data that, if corrected prior to approval of the RMP, would have resulted in a change in mapped land use allocations. Regardless of any such errors in underlying data, the mapped location of land use allocations in the BLM spatial database represents the decision on those allocations, and changes to those allocations would require changes to the approved RMP. As noted in the RMP, the BLM provides the maps accompanying the RMP for illustrative purposes only.

For example, the BLM used existing, district-specific information on structurally-complex forests in part to determine the location of the Late-Successional Reserve. Future identification of patches of structurally-complex forest not included in the Late-Successional Reserve, in and of itself, would not alter the land use allocation. If the BLM identifies substantial areas of errors in the underlying data used to determine land use allocation locations, such that the environmental consequences would be substantially different than those anticipated in the Proposed RMP/Final EIS, then the BLM would engage in additional planning steps and NEPA procedures to make changes to land use allocations.

For some land use allocation decisions, such as the location of the Riparian Reserve, the decision requires identification of features on the ground (e.g., a perennial stream) and the allocation of a corresponding width of Riparian Reserve. The BLM will make this identification of features and allocation of a corresponding width of Riparian Reserve as needed, generally through project implementation. The future identification of features and the allocation of a corresponding width of Riparian Reserve will represent implementation of the approved RMP and will not constitute a change to the approved RMP.

For the District-Designated Reserve – Timber Production Capability Classification, the BLM spatial database includes the current mapped location of this allocation. Over time, the BLM will add additional areas to this allocation through updates to the Timber Production Capability Classification system, when examinations indicate that an area meets the criteria for reservation. The BLM will also delete areas from this allocation and return the area to the Harvest Land Base through updates to the Timber Production Capability Classification system, when examinations indicate that an area does not meet the criteria for reservation. The BLM will implement these additions and deletions to the District-Designated Reserve – Timber Production Capability Classification through plan maintenance, because such changes will represent minor changes based on further refining the decision in the RMP.

The decision also requires the future allocation of some marbled murrelet occupied stands and red tree vole "habitat areas" to the Late-Successional Reserve, as described earlier in this section. The future identification of marbled murrelet occupied stands and red tree vole "habitat areas" and allocation to the Late-Successional Reserve will represent implementation of the approved RMP and will not constitute a change to the approved RMP. These future allocations to the Late-Successional Reserve will not require RMP amendment, because they are explicitly required by the management direction of the approved RMP and were anticipated in the analysis for the Proposed RMP/Final EIS. The BLM will provide annual reporting of survey results for marbled murrelets and red tree voles (**Appendix B**) and will consider the extent of these future allocations through plan evaluations.

Plan Maintenance

The BLM may maintain RMP decisions as necessary to reflect minor changes in data, consistent with 43 CFR 1610.5–4. Plan maintenance is limited to further refining, documenting, or clarifying a previously approved decision. Plan maintenance would not expand the scope of resource uses or restrictions or change the terms, conditions, and decisions of the approved plan. Plan maintenance does not require formal public involvement, interagency coordination, or the NEPA analysis required for making new RMP decisions.

Plan Amendments and Revisions

New information, updated analyses, or new resource use or protection proposals may require amending or revising the RMP.

Plan amendments change one or more of the terms, conditions, or decisions of an approved RMP. Plan amendments are most often prompted by the need to—

- Consider a proposal or action that does not conform to the plan;
- Implement new or revised policy that changes RMP decisions;
- Respond to new, intensified, or changed uses on public land in the decision area; and
- Consider significant new information from resource assessments, plan evaluations, monitoring, or scientific studies relevant to the effects of the RMP.

Plan amendments would be accompanied by either an environmental assessment or EIS, depending on the scope and environmental effects of the amendment.

Plan revisions involve preparation of a new plan to replace an existing one. An RMP revision would be necessary if monitoring and evaluation findings, new data, new or revised policy, or changes in circumstances indicate that decisions for an entire plan or a major portion of the plan would no longer serve as a useful guide for resource management. Plan revisions would be accompanied by an EIS.

References

USDI FWS. 2011. Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). USFWS Region 1, Portland, OR. 258 pp. http://www.fws.gov/wafwo/pdf/NSO%20Revised%20Recovery%20Plan%202011.pdf.

Appendix B – Monitoring Plan

Monitoring is an essential component of an RMP. Monitoring provides information to determine whether the BLM is following the RMP management direction (i.e., implementation monitoring) and to verify if the implementation of actions consistent with the RMP is achieving plan-level desired results (i.e., effectiveness monitoring).

The monitoring plan for this RMP focuses specifically on monitoring the implementation and effectiveness of the RMP and is not intended as an all-encompassing strategy that addresses all ongoing monitoring and research efforts. This monitoring plan does not attempt to address research-based questions. There are many ongoing research-based efforts in which the BLM participates that address evaluating whether the RMP is based on correct assumptions (i.e., validation monitoring).

The use of this monitoring plan by all BLM offices in the decision area will provide a basis for consistent and coordinated monitoring, and allow district information to be compiled and considered at the scale of the entire decision area. The BLM will evaluate the monitoring questions at each monitoring interval to ascertain if the questions, reporting, methods, sample size, or intervals need to be changed. The BLM will make such changes to the monitoring plan through plan maintenance.

Effectiveness Monitoring

The BLM will continue to rely on the existing interagency effectiveness monitoring modules to address key questions about whether implementing actions consistent with the RMP is effectively meeting RMP objectives. The existing interagency effectiveness modules are aquatic and riparian ecosystems, late-successional and old growth, marbled murrelet, northern spotted owl, socioeconomic, and tribal.

The aquatic and riparian ecosystems effectiveness monitoring program assesses status and trends in watershed condition to answer the basic question:

- Is implementation of the RMP maintaining and restoring aquatic and riparian ecosystems to desired conditions on Federal lands in the planning area?

This monitoring effort determines riparian watershed condition status for every 6th field watershed (with > 5 percent Federal ownership along the stream length) based on upslope and riparian data derived from GIS layers and satellite imagery. In-channel attributes are also measured using a statistically valid survey design to assess aquatic watershed condition. Changes in riparian and aquatic conditions provide information for tracking status and trend based on management activities, natural disturbance, and wildfire. More information on the aquatic and riparian ecosystems effectiveness monitoring is contained in the 20-year Monitoring Report (Miller *et al*. 2015), which is incorporated here by reference.

The late-successional and old growth ecosystems effectiveness monitoring program characterizes the status and trend of older forests to answer the basic question:

- Is implementation of the RMP maintaining and restoring late-successional and old growth forest ecosystems to desired conditions on Federal lands in the planning area?

This monitoring effort determines the current status of forest vegetation from classification of satellite imagery and analysis of inventory and other available data. Remote sensing change detection and trend analysis provide information for tracking losses and gains in forest conditions from management activities, natural succession, and wildfire. More information on the late-successional and old growth ecosystems effectiveness monitoring is contained in the 20-year Monitoring Report (Davis *et al*. in press), which is incorporated here by reference.

The marbled murrelet effectiveness monitoring program assesses status and trends in marbled murrelet populations and nesting habitat to answer the basic questions:

- Are the marbled murrelet populations associated with the planning area stable, increasing, or decreasing?
- Is implementation of the RMP maintaining and restoring marbled murrelet nesting habitat?

This monitoring effort determines marbled murrelet population size and trends by sampling of populations in near-shore waters, using standardized and consistent methodology. Trends in the amount, quality, and distribution of nesting habitat in the planning area are evaluated periodically using a model approach that applies current vegetation maps along with other data derived from GIS layers and other available sources. More information on the marbled murrelet effectiveness monitoring is contained in the 20-year Monitoring Report (Falxa *et al*. 2015), which is incorporated here by reference.

The northern spotted owl effectiveness monitoring program assesses status and trends in northern spotted owl populations and habitat to answer the basic questions:

- Will implementing the RMP reverse the downward trend in spotted owl populations?
- Is implementation of the RMP maintaining and restoring owl habitat necessary to support viable owl populations?

Population monitoring documents survival, reproductive success, and annual rate of population change in northern spotted owl demographic study areas. Maps depicting habitat suitability are produced using habitat models applied to current vegetation maps developed by the late-successional and old growth monitoring program along with other available data sources. More information on the northern spotted owl effectiveness monitoring is contained in the draft 20-year Monitoring Report (Davis *et al*. 2015), which is incorporated here by reference.

The socio-economic effectiveness monitoring program assesses social and economic impacts of Federal forest management, framed as two questions:

- Are predictable levels of timber and non-timber resources available and being produced?
- Are communities and economies experiencing positive or negative changes that may be associated with Federal forest management?

The key objectives of the socio-economic effectiveness monitoring program are to identify communities experiencing significant positive or negative conditions or trends, as well as those that are not, and to improve understanding of the relationship between Federal forest management and social and economic change. To address the objectives above, the monitoring

program analyzes trends in data for timber and non-timber resources. The monitoring program considers social and economic indicators derived from U.S. census data, analysis of quantitative data from agency databases, along with other available data. More information on the socioeconomic effectiveness monitoring is contained in the 20-year Monitoring Report (Grinspoon *et al*. 2015), which is incorporated here by reference.

The tribal effectiveness monitoring program addresses conditions, trends, and access to resources protected by treaty or of interest to American Indian tribes, the condition of and access to religious and cultural heritage sites, and the quality of the government-to-government relationship. The basic effectiveness monitoring questions are:

- How well and to what degree is government-to-government consultation being conducted under the RMP?
- Have the goals and objectives of the consultation been achieved?
- Is the consultation occurring because of effects on resources of tribal interest on Federal lands or trust resources on tribal lands?

Effectiveness monitoring data are collected during interviews using a standardized questionnaire developed by Federal agency officials. All federally recognized Tribes with Tribal lands or territories within the RMP area will be invited to participate in interviews. More information on the tribal effectiveness monitoring is contained in the 20-year Monitoring Report (Vinyeta and Lynn 2015), which is incorporated here by reference.

The interagency effectiveness monitoring modules will continue to report every 5 years. The BLM will continue to use these reports to state the findings and conclusions made through monitoring, and to serve as a report to managers and the public. Effectiveness monitoring reports will also include analysis of whether the BLM is achieving desired conditions based on effectiveness monitoring questions and, where possible, inform adaptive management.

In addition to the six interagency effectiveness monitoring modules, the BLM will conduct effectiveness monitoring of hazardous fuels treatments through the Fuels Treatment Effectiveness Monitoring (FTEM) system. The FTEM is a centralized interagency web-based hub for recording on-the-ground documentation describing the effect of hazardous fuels reduction treatments on the wildland fire environment, framed around two key questions:

- Did the fire behavior change as a result of the treatment (as planned in the treatment objectives)?
- Did the treatment contribute to control of the fire?

The FTEM system is intended to identify the extent which hazardous fuels treatments are affecting the wildland fire environment. Field personnel from each field office will fill out an online form for every hazardous fuels reduction treatment intersected by a wildfire, within 90 days of the wildfire burning in the treated area.

The BLM will conduct monitoring of employment effects on low-income populations in Coos and Curry Counties.[46] The Proposed RMP/Final EIS identified that the approved RMP will have

[46] This monitoring component is not effectiveness monitoring in the same sense as the other components described in this section, in that it will not be directly evaluating whether the RMP is effectively meeting its objectives. Instead, this monitoring will evaluate whether the employment effects in Coos and Curry Counties identified in the Proposed RMP/Final EIS are occurring as analyzed and will identify any potential mitigation measures that would

disproportionately negative employment effects on low-income populations in Coos and Curry counties. Although the BLM will monitor the level and type of timber harvest, payments to counties, and changes in resource conditions, these measurements will not tell the BLM how low-income populations are being affected. The BLM will conduct monitoring, that will identify and track appropriate indicators of social and economic conditions. The BLM will conduct primary research, such as focus groups or interviews with community residents, leaders, and others, to supplement and interpret the secondary data. The results of the monitoring will allow the BLM and its partners to identify environmental justice impacts that have not been mitigated through the RMP as implemented or by other means, pointing the way toward potential mitigation actions.

Implementation Monitoring

The implementation monitoring plan for the RMP will assess the level of management activity and will examine if the BLM is implementing actions in accordance with management direction of this RMP.

The BLM will employ sampling or evaluation of a subset of implementation actions. The BLM has designed this monitoring plan to avoid prohibitive costs and effectively answer monitoring questions and reporting levels of activities. It is not necessary or desirable for the BLM to monitor every implementation action of an RMP. The BLM will select projects to be monitored based on those that will yield a greater amount of information or be more beneficial. For example, a random sample may result in monitoring of a relatively small straightforward project that will yield limited information, whereas a more sophisticated or complex project might be available for monitoring that will yield more information or be more effective. As much as possible, the BLM will integrate project implementation monitoring among resources and programs. This integration saves time and costs, and helps build common information and understanding between various resources and programs.

The BLM will conduct sampling at the level of the entire administrative unit to which the resource management applies (e.g., Coos Bay District or Swiftwater Field Office of the Roseburg District).

The BLM will report implementation monitoring results annually in a monitoring report, which may be combined with other documents, such as an annual program summary. The monitoring report will report, track, and assess the progress of implementation of actions consistent with the RMP, state the findings and conclusions made through monitoring, and serve as a report to managers and the public. Monitoring reports will also include any discussions and analysis of non-compliance and recommendations for corrective action.

Some management direction in the RMP is not measurable or quantifiable, or does not have a standard or threshold of acceptability, and therefore will not lend itself to being addressed through monitoring questions that are almost always dependent on a quantifiable basis of measurement. The level of activity for certain management direction that does not have standards

be revealed by the monitoring of effects, such as changes to the intensity or extent of management actions under specific resource programs.

or thresholds of acceptability will be monitored in the form of a program reporting item. The BLM will use the information in the program reporting items, to assess the level of management activity and examine if the BLM is implementing actions consistent with the analytical assumptions in the Proposed RMP/Final EIS and the biological opinions on the Proposed RMP.

In some cases, where monitoring indicates very high compliance with the plan, the BLM will subsequently adjust the frequency or interval of monitoring for cost and time efficiency.

Monitoring of certain questions will not take place in the early years of implementation, because the BLM will not yet have completed projects and, therefore, would not be ready for monitoring. Although incomplete projects may be informally examined by managers to assess progress towards implementing management actions and achieving objectives, the evaluation of incomplete projects will not be part of formal plan monitoring. Not all programs or resources have monitoring questions.

Monitoring Questions

Late-Successional Reserve

M1. Monitoring Question: Have the number of snags been created in the appropriate size classes as described in the management direction (**Table 3**)?

Monitoring Scope: Evaluate at least one completed timber sale in a Late-Successional Reserve per field office. Report the number of snags created > 20" DBH and > 10" DBH per project.

Monitoring Interval: Annual; change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M2. Monitoring Question: Has the amount of down woody material described in the management direction (**Table 4**) been retained when implementing fuels or prescribed fire treatments?

Monitoring Scope: Evaluate at least one fuels or prescribed fire treatment in the Late-Successional Reserve per field office. Report the percent cover of down woody material and the method used to measure percent cover.

Monitoring Interval: Annual; change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Riparian Reserve

M3. Monitoring Question: Is the width of the Riparian Reserve established adjacent to regeneration harvests in the Moderate Intensity Timber Area or Low Intensity Timber Area in accordance with the RMP?

Monitoring Scope: Evaluate all streams within at least one completed timber sale per field office.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M4. Monitoring Question: When thinning treatments are applied in the Riparian Reserve along fish-bearing streams and perennial streams, is a minimum of 30 percent canopy cover and 60 trees per acre retained? Are thinning treatments excluded from the inner zone of the Riparian Reserve along perennial and intermittent fish-bearing streams?

Monitoring Scope: Evaluate all fish-bearing streams and perennial streams treated within at least one completed thinning timber sale per field office.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M5. Monitoring Question: When thinning treatments are applied in the Riparian Reserve along intermittent non-fish-bearing streams, is a minimum of 30 percent canopy cover and 60 trees per acre retained? Are thinning treatments excluded within inner zone of the Riparian Reserve along intermittent non-fish bearing streams?

Monitoring Scope: Evaluate 0.25 mile of streams within thinning projects completed within the past year per field office.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M6. Monitoring Question: Were Best Management Practices that were identified as applicable (as indicated through NEPA decision record or contract stipulations) applied during project implementation?

Monitoring Scope: Evaluate at least one project with identified Best Management Practices per field office. Projects from any land use allocation may be selected for evaluation.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M7. Monitoring Question: Have the number of snags been created in the appropriate size classes as described in the management direction (**Table 3**)?

Monitoring Scope: Evaluate at least one completed timber sale that includes Riparian Reserve per field office. Report the number of snags created > 20” DBH and > 10” DBH per project.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M8. Monitoring Question: Has the amount of down woody material described in the management direction (**Table 4**) been retained when implementing fuels or prescribed fire treatments?

Monitoring Scope: Evaluate at least one fuels or prescribed fire treatment in the Riparian Reserve per field office. Report the percent cover of down woody material and the method used to measure percent cover.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Harvest Land Base

M9. Monitoring Question: Has the ASQ been offered for sale within the variation provided for in the plan?

Monitoring Scope: Report annual sale quantity offered for sale by sustained-yield unit and the cumulative total since approval of the plan. Also report as volume offered by harvest type (selection harvest, commercial thinning, regeneration harvest, and timber salvage) by sustained-yield unit.

Monitoring Interval: Annual.

M10. Monitoring Question: Have the number of snags been created in the appropriate size classes as described in the management direction (**Table 2**)?

Monitoring Scope: Evaluate at least one completed timber sale per field office. Report the number of snags created > 20" DBH and > 10" DBH per project.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M11. Monitoring Question: Are regeneration harvest areas, salvage harvest areas, and group selection openings being reforested in accordance with the RMP?

Monitoring Scope: Evaluate at least one completed timber sale per field office.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Harvest Land Base – Moderate Intensity Timber Area and Low Intensity Timber Area

M12. Monitoring Question: Is a stand average relative density of 25–45 percent maintained after commercial thinning?

Monitoring Scope: Evaluate at least one completed timber sale per field office. Report the stand average relative density per stand treated within each timber sale evaluated.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M13. Monitoring Question: Are trees retained after regeneration harvest in accordance with targets set forth in the RMP?

Monitoring Scope: Evaluate at least one completed timber sale per field office.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Air Quality

M14. Monitoring Question: Have smoke intrusions occurred in areas designated as Class I for air quality and non-attainment occurred as a result of BLM prescribed fire?

Monitoring Scope: Report intrusions through Oregon Department of Forestry (ODF) as required under the Oregon Smoke Management Plan.

Monitoring Interval: Annual.

Areas of Critical Environmental Concern

M15. Monitoring Question: Are important and relevant values being maintained or restored?

Monitoring Scope: Evaluate 20 percent of the Areas of Critical Environmental Concern.

Monitoring Interval: Rotate the monitoring of Areas of Critical Environmental Concern, so that all of the areas will be monitored over a 5-year period.

Rare Plants and Fungi

M16. Monitoring Question: Is management of plant species that are listed under the Endangered Species Act consistent with recovery plans and designated critical habitat?

Monitoring Scope: Evaluate at least two completed projects per field office that 'may affect' ESA-listed species.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M17. Monitoring Question: Have protection measures maintained populations of BLM special status plant and fungi species?

Monitoring Scope: Evaluate at least two completed projects per field office in which the BLM implemented protection measures for BLM Special Status plant and fungi species.

Monitoring Interval: Annual.

Cultural and Paleontological Resources Including American Indian Traditional Uses

M18. Monitoring Question: Were previously unknown sites discovered within project areas after the commencement of ground-disturbing activities? If yes, how many?

Monitoring Scope: Evaluate at least 20 percent of management activities per field office that involve ground disturbance that have been completed within the past year.

Monitoring Interval: Annual.

M19. Monitoring Question: Have ground-disturbing actions avoided previously recorded sites that are listed (or eligible for listing) on the National Register of Historic Places?

Monitoring Scope: Evaluate 100 percent of recorded listed or eligible sites that lie within the boundaries of a ground-disturbing project after the project is completed. Report number of sites present and number of sites avoided.

Monitoring Interval: Annually when listed or eligible sites are present and avoidance prescribed.

M20. Monitoring Question: Are mitigation measures employed on sites that are listed (or eligible for listing) on the National Register of Historic Places prior to disturbance (when disturbance cannot be practically avoided) through practices such as data recovery, including excavation, relocation, or documentation?

Monitoring Scope: Evaluate 100 percent of sites that are listed (or eligible for listing) on the National Register of Historic Places that were at risk of loss from ground disturbing management activities that have been completed within the past year. Report number of sites at risk and number of sites that were mitigated and with what methods.

Monitoring Interval: Annual.

M21: Monitoring Question: Are cultural and paleontological resources that are threatened by natural processes or human activity (other than Federal undertakings) stabilized and protected or excavated and the data recovered where warranted by the scientific importance of the site?

Monitoring Scope: Evaluate 100 percent of cultural and paleontological resources threatened or impacted by events that have happened within the past year. Report number of sites threatened or impacted and report number of sites stabilized or protected and with what measures.

Monitoring Interval: Annual.

Energy and Minerals

M22. Monitoring Question: Has the level of opportunities for the exploration and development of locatable, leasable, and salable mineral resources been maintained?

Monitoring Scope: Identify new closures and withdrawals.

Monitoring Interval: Five years.

Fire and Fuels Management

M23. Monitoring Question: Were fuels managed to reduce wildfire hazard, risk to communities, and negative impacts to ecosystems, and highly valued resources?

Monitoring Scope: Summarize the primary and secondary reason for treatments and the primary and secondary initiative for all treatments, based on spatial inventory treatment data.

Monitoring Interval: Annual.

M24. Monitoring Question: Have fuels treatments created fuel beds and fuel breaks intended to reduce potential fire behavior, reduce potential wildfire severity, or improve fire management opportunities?

Monitoring Scope: Evaluate at least one treatment per field office.

Monitoring Interval: Annual.

M25. Monitoring Question: Did risk-based wildfire management decisions implemented in response to natural ignitions include an examination of the full range of fire management options?

Monitoring Scope: Evaluate 100 percent of Wildland Fire Decision Support System decisions completed.

Monitoring Interval: Annual.

M26. Monitoring Question: Did land management treatments intersected by wildfires change fire behavior, minimize negative wildfire effects and damage to resource values, or positively contribute toward fire management opportunities?

Monitoring Scope: Complete a treatment effectiveness assessment of 100 percent of treatments intersected by wildfire.

Monitoring Interval: Annual.

Hazardous Materials

M27. Monitoring Question: Has the response to hazardous material incidents included cleanup, proper notifications, criminal investigations, and site assessments as applicable?

Monitoring Scope: Evaluate 100 percent of hazardous material incidents.

Monitoring Interval: Annual.

M28. Monitoring Question: Are hazardous materials stored, treated, and disposed of in accordance with applicable laws and regulations?

Monitoring Scope: Evaluate 100 percent of district-stored, treated, and disposed hazardous materials.

Monitoring Interval: Annual.

Invasive Species – Port-Orford-cedar Root Disease (*Phytophthora lateralis*)

M29. Monitoring Question: Are General Direction requirements from the Record of Decision and Resource Management Plan Amendment for Management of Port-Orford-cedar in Southwest Oregon, Coos Bay, Medford, and Roseburg Districts (USDI BLM 2004) for maintaining and reducing the risk of *Phytophthora lateralis* infections being implemented?

Monitoring Scope: Describe the general activities accomplished for maintaining and reducing the risk of *Phytophthora lateralis* infections, which may include modifying Port-Orford-cedar bough collection permits to include prevention practices, applying adaptive management, community outreach, and eradication activities.

Monitoring Interval: Annual.

M30. Monitoring Question: Are project-specific management actions applied as required in the Record of Decision and Resource Management Plan Amendment for Management of Port-Orford-cedar in Southwest Oregon, Coos Bay, Medford, and Roseburg Districts (USDI BLM 2004) when a need is indicated by using the Port-Orford-cedar Risk Key on page 32 of the Port-Orford-cedar ROD/RMP Amendment?

Monitoring Scope: Describe where Port-Orford-cedar root disease management actions have been incorporated into project-specific implementation monitoring programs. Port-Orford-cedar root disease management actions could include seasonal restrictions, using uninfested water, unit

scheduling, designating access routes, and public education through signage in site-specific project design and implementation.

Monitoring Interval: Annual.

Lands, Realty, Access, and Transportation

M31. Monitoring Question: Have the acres of O&C lands of all classifications and the acres of O&C and public domain lands that are available for harvesting been reduced through disposal, exchange, or purchase?

Monitoring Scope: Review O&C lands records through the Oregon State Office. Evaluate total net change in land tenure of O&C lands in the decision area. Evaluate changes at 10-year intervals keyed from 1998, the date of the legislation that provides for no net loss of O&C lands.

Monitoring Interval: Three years.

Recreation

M32. Monitoring Question: Are Special Recreation Management Areas managed in accordance with their planning frameworks?

Monitoring Scope: Evaluate 20 percent of the Special Recreation Management Areas.

Monitoring Interval: Annual. The monitoring of Special Recreation Management Areas will be rotated so that over a 5-year period 100 percent of the areas will be monitored.

Soils

M33. Monitoring Question: Have land management actions created more than a 20 percent level of detrimental soil conditions at the unit treatment scale?

Monitoring Scope: Evaluate 10 percent of each treatment unit per Field Office that has the potential to affect the existing soil resource condition. Use Forest Soil Disturbance Monitoring Protocol (Page-Dumroese *et al*. 2009a, 2009b) to determine level of compaction and disturbance, amount of organic matter removed, and extent and intensity of prescribed burning or fuel reduction treatment areas.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Visual Resource Management

M34. Monitoring Question: Is the level of change in character for the areas designated to be managed as VRM Class I, II, and III consistent with RMP requirements?

Monitoring Scope: Evaluate 20 percent of activities that have the potential to affect the existing character in VRM Class I, II, and III.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Wilderness Characteristics

M35. Monitoring Question: Are wilderness characteristics maintained in accordance with RMP requirements?

Monitoring Scope: Report all management activities that will adversely affect wilderness characteristics in Wilderness Study Areas and Wilderness Areas and District-Designated Reserve – Lands Managed for their Wilderness Characteristics. Monitor for amount of degradation or loss of inventoried wilderness characteristics resulting from undue or unnecessary degradation as a result of human or natural causes.

Monitoring Interval: Five years.

Wild and Scenic Rivers

M36. Monitoring Question: Are the outstandingly remarkable values of designated Wild and Scenic river corridors (including those classified as Wild, Scenic, or Recreational) being maintained?

Monitoring Scope: Evaluate 100 percent of BLM-authorized activities that have the potential to affect the outstandingly remarkable values of Wild and Scenic River corridors.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M37. Monitoring Question: Are the outstandingly remarkable values of the eligible Nestucca River Segment B and suitable Little North Santiam River, North Fork Siletz River, Rogue River, Sandy River, Table Rock Fork – Molalla River, and West Fork Illinois River Wild and Scenic river corridors (including those classified as Wild, Scenic, or Recreational) being maintained?

Monitoring Scope: Evaluate 100 percent of BLM-authorized activities that have the potential to affect the outstandingly remarkable values of these Wild and Scenic River corridors.

Monitoring Interval: Annual; change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Wildlife

M38. Monitoring Question: Is management of species that are listed under the Endangered Species Act consistent with recovery plans and designated critical habitat?

Monitoring Scope: Evaluate at least two completed projects per field office that 'may affect' ESA-listed species.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

M39. Monitoring Question: Have BLM actions in the Harvest Land Base caused the abandonment (i.e., caused a site to not be occupied during the year following the BLM action) of more than 10 percent of northern spotted owl occupied sites in the Harvest Land Base during the first decade of RMP implementation, more than an additional 15 percent of northern spotted owl occupied sites in the Harvest Land Base during the second decade of RMP implementation, and more than an additional 20 percent of northern spotted owl occupied sites in the Harvest Land Base per decade beginning with the third decade of RMP implementation?

Monitoring Scope: The BLM State Office wildlife program lead will coordinate this monitoring item. BLM wildlife biologists in each district will estimate the number of sites in the Harvest Land Base occupied by a northern spotted owl territorial pair or resident single. Biologists will base their estimates on the most recent year of protocol surveys supplemented by the previous 4 years of protocol surveys and, if no protocol surveys of a site has been completed during the previous 5 years, by the most recent 10 years of protocol surveys. BLM wildlife biologists in each district will examine all actions in the Harvest Land Base implemented under the RMP and estimate the number of northern spotted owl occupied sites in the Harvest Land Base that have been abandoned by northern spotted owls due to BLM actions in the Harvest Land Base. Although the behaviors of individual northern spotted owl pairs and singles vary, in general, the following are evidence that BLM actions caused site abandonment:

- The BLM modified or removed habitat in the nest patch, which commonly extends 300 meters from the occupied site.
- Following a BLM action in the 500-acre core use area surrounding the occupied site, less than 250 acres of the core use area supported nesting-roosting habitat, when all land ownerships are considered, regardless of the amount of nesting-roosting habitat in this area before the BLM action.
- Following a BLM action in the median provincial home range areas surrounding the occupied site, less than 40 percent of the home range area supported nesting-roosting habitat, when all land ownerships are considered, regardless of the amount of nesting-roosting habitat in this area before the BLM action.

If, following a BLM action, survey indicates that a site is occupied by a territorial pair or resident single, the biologist will determine that the BLM action did not cause site abandonment.

The State Office wildlife program leader will collect results from all BLM districts, make the plan-wide monitoring calculations, and report the results to the U.S. Fish and Wildlife Service.

Monitoring Interval: Biologists will annually document all BLM actions associated with northern spotted owl occupied sites in the Harvest Land Base, and every 5 years will estimate the percent of occupied sites in the Harvest Land Base that were abandoned due to BLM actions implemented under the RMP.

M40. Monitoring Question: Have BLM actions avoided adverse effects to Fender's blue butterfly, Oregon silverspot butterfly, Taylor's checkerspot butterfly, streaked horned lark, Lower Columbia River Distinct Population Segment of Columbian white-tailed deer, or western snowy plover, except when done in accordance with an approved recovery plan, conservation agreement, species management plan, survey and monitoring protocol, or critical habitat rule, and when the action is necessary for the conservation of the species?

Monitoring Scope: Evaluate at least 20 percent of actions that 'may affect' Fender's blue butterfly, Oregon silverspot butterfly, Taylor's checkerspot butterfly, streaked horned lark, Lower Columbia River distinct population segment of Columbian white-tailed deer, or western snowy plover.

Monitoring Interval: Annual – change interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance.

Program Reporting Items

Program reporting items involve activities that are related to: (1) certain analytical assumptions that are pertinent to non-specific management actions; or (2) analytical assumptions pertinent to the analysis of environmental consequences in the Proposed RMP/Final EIS and the biological opinions on the Proposed RMP. Not all programs or resources have reporting items.

Late-Successional Reserve

R1. Program Reporting Item: Report the volume of non-ASQ timber offered for sale from the Late-Successional Reserve. Reporting will be annual.

Riparian Reserve

R2. Program Reporting Item: Report the volume of non-ASQ timber offered for sale from the Riparian Reserve. Reporting will be annual.

R3. Program Reporting Item: Report the number of fish-passage blockages that have been corrected and the number of resulting miles of stream habitat that are newly accessible. Reporting will be annual.

R4. Program Reporting Item: Report the miles of permanent road construction, road renovation, road improvement, and road decommissioning within the Riparian Reserve. Reporting will be annual.

R5. Program Reporting Item: Report the overall level of stream and riparian restoration activities (e.g., placement of large wood and boulders in streams, planting, and thinning). Report the level of stream restoration activities in high intrinsic potential streams, or streams with high priority fish populations. Reporting will be annual.

Harvest Land Base

R6. Program Reporting Item: Report acres by treatment type for silvicultural treatments listed in the following table by Harvest Land Base sub-allocation. Compare against modeling results for the appropriate decade of implementation; see **Table B-1** and **Table B-2** for values for decade one and decade two, respectively. See the Proposed RMP/Final EIS for subsequent decades. Report commercial thinning, selection harvest, regeneration harvest, and timber salvage harvest as acres sold, and report other treatment type categories as acres treated. Reporting will be annual.

Table B-1. Decade one modeled acres by treatment type by Harvest Land Base sub-allocation.

Decade 1 Treatment Type‡	Coos Bay			Eugene			Roseburg			Salem			Grand Total (Acres)
	MITA (Acres)	LITA (Acres)	Total (Acres)	MITA (Acres)	LITA (Acres)	Total (Acres)	MITA (Acres)	LITA (Acres)	Total (Acres)	MITA (Acres)	LITA (Acres)	Total (Acres)	
Commercial Thinning*	840	430	1,270	3,000	420	3,420	3,330	4,270	7,600	6,310	910	7,220	**19,510**
Selection Harvest*	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Regeneration Harvest*	2,620	510	3,130	9,460	980	10,440	1,780	2,420	4,200	11,120	1,100	12,230	**30,000**
Timber Salvage Harvest*	-	-	-	-	-	-	190	-	190	-	-	-	**190**
Reforestation†	3,320	650	3,970	12,580	1,300	13,890	2,460	3,030	5,490	13,350	1,320	14,670	**38,020**
Manual Cutting	4,450	870	5,320	8,510	880	9,400	1,530	1,890	3,420	11,790	1,170	12,960	**31,100**
Mulching	-	-	-	-	-	-	1,340	1,650	2,980	-	-	-	**2,980**
Tubing	1,810	350	2,160	9,460	980	10,440	1,360	1,670	3,030	5,560	550	6,110	**21,740**
Shading	-	-	-	950	100	1,040	-	-	-	-	-	-	**1,040**
Trapping	-	-	-	-	-	-	-	-	-	1,670	170	1,830	**1,830**
Scalping	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Pre-commercial Thinning	3,110	810	3,920	10,900	1,200	12,100	1,980	2,880	4,860	12,870	1,150	14,010	**34,890**
Pruning	260	50	310	1,890	200	2,090	120	150	260	560	60	610	**3,270**
Stand Conversion	100	20	120	-	-	-	-	-	-	-	-	-	**120**

* Acreage includes untreated portion of stand (i.e., skips, aggregate retention areas).
† Natural and artificial reforestation.
‡ These estimates represent analytical results based on the vegetation modeling assumptions described in Appendix C of the Proposed RMP/Final EIS (USDI BLM 2016). The BLM has made these assumptions and estimations solely for analytical purposes. These acreages of silvicultural treatments by district office and by Harvest Land Base sub-allocation for each decade do not represent management direction or restrictions on silvicultural treatments under the RMP. Silvicultural treatments will be implemented consistent with the management direction for the Harvest Land Base sub-allocation and consistent with project-level analysis and decision-making.

Table B-2. Decade two modeled acres by treatment type by Harvest Land Base sub-allocation.

Decade 2 Treatment Type‡	Coos Bay			Eugene			Roseburg			Salem			Grand Total (Acres)
	MITA (Acres)	LITA (Acres)	Total (Acres)	MITA (Acres)	LITA (Acres)	Total (Acres)	MITA (Acres)	LITA (Acres)	Total (Acres)	MITA (Acres)	LITA (Acres)	Total (Acres)	
Commercial Thinning*	2,350	520	2,870	11,300	1,100	12,400	1,520	4,950	6,460	13,590	1,590	15,180	**36,910**
Selection Harvest*	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Regeneration Harvest*	1,680	500	2,180	4,450	770	5,220	2,170	3,010	5,180	8,750	980	9,730	**22,310**
Timber Salvage Harvest*	-	-	-	-	-	-	80	580	660	-	-	-	**660**
Reforestation†	2,140	630	2,770	5,920	1,020	6,940	2,810	4,490	7,300	10,500	1,170	11,680	**28,690**
Manual Cutting	2,860	850	3,710	4,010	690	4,700	1,750	2,800	4,550	9,280	1,040	10,310	**23,270**
Mulching	-	-	-	-	-	-	1,530	2,440	3,970	-	-	-	**3,970**
Tubing	1,160	340	1,510	4,450	770	5,220	1,550	2,480	4,030	4,380	490	4,870	**15,630**
Shading	-	-	-	450	80	520	-	-	-	-	-	-	**520**
Trapping	-	-	-	-	-	-	-	-	-	1,310	150	1,460	**1,460**
Scalping	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Pre-commercial Thinning	1,680	500	2,180	4,450	770	5,220	2,250	3,590	5,840	8,750	980	9,730	**22,970**
Pruning	170	50	220	890	150	1,040	140	220	350	440	50	490	**2,100**
Stand Conversion	70	20	90	-	-	-	-	-	-	-	-	-	**90**

* Acreage includes untreated portion of stand (i.e., skips, aggregate retention areas).
† Natural and artificial reforestation.
‡ These estimates represent analytical results based on the vegetation modeling assumptions described in Appendix C of the Proposed RMP/Final EIS (USDI BLM 2016). The BLM has made these assumptions and estimations solely for analytical purposes. These acreages of silvicultural treatments by district office and by Harvest Land Base sub-allocation for each decade do not represent management direction or restrictions on silvicultural treatments under the RMP. Silvicultural treatments will be implemented consistent with the management direction for the Harvest Land Base sub-allocation and consistent with project-level analysis and decision-making.

Rare Plants and Fungi

R7. Program Reporting Item: Report the acres of activities designed to maintain or restore natural plant communities on non-forest and non-commercial lands. Reporting will be annual.

Energy and Minerals

R8. Program Reporting Item: Report the number of biomass utilization projects. Reporting will be annual.

Fire and Fuels Management

R9. Program Reporting Item: Report the number of acres of hazardous fuels treatments by treatment type and by land use allocation (i.e., under burning, broadcast burning, hand pile and burn, landing pile and burn, machine pile and burn, slash and scatter, and mastication). Reporting will be annual.

Fisheries

Provide the following reporting items to the National Marine Fisheries Service and U.S. Fish and Wildlife Service by species (e.g., by Evolutionarily Significant Unit or Distinct Population Segment) every three years following the effective date of the ROD on the cumulative total of three years of activities, consistent with the terms and conditions in the incidental take statements included with the biological opinions on the Proposed RMP.

R10. Program Reporting Item: Report the total miles of BLM-managed roads of all surface types within 200 feet of streams. Report the miles of BLM-managed roads of all surface types constructed within 200 feet of streams. Report the miles of BLM-managed roads of all surface types closed within 200 feet of streams. Reporting will be every three years.

R11. Program Reporting Item: Report the miles of BLM-managed paved roads within 200 feet of streams. Report the miles of BLM-managed paved roads constructed within 200 feet of streams. Report the miles of BLM-managed paved roads closed within 200 feet of streams. Reporting will be every three years.

R12. Program Reporting Item: Report the number of recreational facilities within 216 feet of habitat occupied by threatened or endangered fish or designated critical habitat for threatened or endangered fish. Report the number of recreational facilities constructed within 216 feet of habitat occupied by threatened or endangered fish or designated critical habitat for threatened or endangered fish. Report the number of recreational facilities closed within 216 feet of habitat occupied by threatened or endangered fish or designated critical habitat for threatened or endangered fish. Reporting will be every three years.

R13. Program Reporting Item: Report the number of road-related sediment reduction actions. Report the number of stormwater reduction actions. Reporting will be every three years.

Forest Management

R14. Program Reporting Item: Report the number of acres of silvicultural treatments by treatment type and by land use allocation, including commercial thinning, selection harvest, regeneration harvest, timber salvage harvest, reforestation (natural and artificial), manual cutting, mulching, tubing, shading, trapping, scalping, pre-commercial thinning, non-commercial thinning, pruning, and stand conversion. Report acres of commercial thinning, selection harvest, regeneration harvest, and timber salvage harvest as acres sold; report all other treatment types as acres treated. Reporting will be annual.

Invasive Species

R15. Program Reporting Item: Report the number of acres of manual, mechanical, cultural, chemical, and biological treatments used to manage invasive species infestations. Reporting will be annual.

R16. Program Reporting Item: Report the number of acres of invasive species inventories. Reporting will be annual.

R17. Program Reporting Item: Report the number of acres of inventory, manual, mechanical, cultural, and chemical treatments used to manage sudden oak death (*Phytophthora ramorum*) infections. Reporting will be annual.

Socioeconomics

R18. Program Reporting Item: Report the payments to counties associated with BLM-administered lands including O&C, Coos Bay Wagon Roads, and Public Domain lands. Reporting will be annual.

R19. Program Reporting Item: Report receipts from timber sales, special forest products, recreation, and permits. Reporting will be annual.

R20. Program Reporting Item: Report appropriations; number of full time and temporary employees; and major new facility developments or improvements. Reporting will be annual.

Recreation

R21. Program Reporting Item: Report the number of service-oriented and outreach programs, including interpretation and education provided to visitors. Reporting will be annual.

R22. Program Reporting Item: Report the status of development of comprehensive travel management plans for off-highway vehicle management areas and travel management areas. Reporting will be annual.

R23. Program Reporting Item: Within Special Recreation Management Areas (SRMAs), conduct visitor studies or on-site monitoring to assess recreation outcome attainment, targeted recreation activity participation, and protection of recreation setting characteristics during the primary recreation use season. Reporting will be conducted along a rotating schedule, focusing on a cross section of SRMAs within one district each year. Monitoring cycle will run every 6 years between districts.

Special Forest Products

R24. Program Reporting Item: Report the number of permits for harvest and collection of special forest products. Reporting will be annual.

Soils

R25. Program Reporting Item: When greater than 20 percent of the acres treated in any manner have detrimental soil disturbance resulting from timber harvest or fuel reduction treatments, report the total number of treatment units and the representative percentage of total acres sampled these units entail. Base reporting on evaluation of at least 10 percent of the total number of completed timber harvest units and 10 percent of completed fuel reduction treatment units. Reporting will be annual.

Wildlife

R26. Program Reporting Item: Report the survey effort for marbled murrelet and the outcomes of that survey effort. For each survey polygon, report: acres of survey, years surveys were conducted, age of stand at time of survey, presence/absence of platform trees, protocol used for the survey, and occupied or presence detections of marbled murrelet. For consistency, an example table format is presented below (**Table B-3**). Reporting will be annual.

Table B-3. Marbled murrelet survey reporting.

Survey Polygon (Name)	Survey Area (Acres)	Survey Date(s) (Years)	Stand Age (Years)	Protocol Used	Marbled Murrelet Detections		
					Occupied	Presence	None
Sample Project	*000*	*20XX–20XX*	*000*	*Citation*	*X*	*X*	*X*

R27. Program Reporting Item: Report the number of newly discovered occupied marbled murrelet sites. For each newly discovered occupied marbled murrelet site, report: name of site (master site number), associated survey that discovered the site, survey dates (years of survey), and acreage included in the occupied site designation. For consistency, an example table format is presented below (**Table B-4**). The table should present a running list of all occupied sites designated and the cumulative number and acreage of occupied sites. Reporting will be annual.

Table B-4. Marbled murrelet occupied site.

Survey Dates (Years)	Occupied Site Name	Associated Survey (Name)	Area Designated (Acres)
20XX, 20XX	*Sample Project (MSNO XXXX)*	*Sample Project*	*000*
Cumulative Total	***000 sites***	**-**	***000***

R28. Program Reporting Item: Report the amount of marbled murrelet nesting habitat that was modified or removed within the Harvest Land Base *without* pre-disturbance surveys (i.e.,

35–50 miles from the Pacific Ocean except within exclusion Areas C and D as shown in **Figure 2**). For stands of marbled murrelet nesting habitat modified or removed without surveys, report: harvest type, acres, date of treatment, and age at time of treatment. For consistency, an example table format is presented below (**Table B-5**). Reporting will be annual.

Table B-5. Marbled murrelet nesting habitat modified or removed *without* surveys.

Project (Name)	Harvest Type	Area (Acres)	Date Modified/ Removed (Year)	Stand Age at the Time of Modification/Removal (Years)
Sample Project	*Harvest Type*	*000*	*20XX*	*000*

R29. Program Reporting Item: Report the survey effort for the red tree vole north of Highway 20 within the North Oregon Coast DPS and the outcomes of that survey effort. For each survey polygon, report: acres of survey, year surveys were conducted, age of stand at time of survey, protocol used for the survey, number of active or inactive red tree vole sites discovered, and the total acreage of habitat areas established associated with the discoveries. For consistency, an example table format is presented below (**Table B-6**). Reporting will be annual.

Table B-6. Survey reporting for the North Oregon Coast DPS of the red tree vole.

Survey Polygon (Name)	Survey Area (Acres)	Survey Date (Years)	Stand Age (Years)	Protocol Used	Red Tree Vole Discoveries			
					Active Sites (Number)	***Inactive Sites (Number)***	***None (Number)***	***Total Habitat Area (Acres)***
Sample Project	*000*	*20XX*	*000*	*Citation*	*000*	*000*	*000*	*000*

R30. Program Reporting Item (Coos Bay District only): Report number, type, and acres (as appropriate) of restoration actions for the western snowy plover. Reporting will be annual.

R31. Program Reporting Item (Salem District only): Report number and acres of deer and elk forage planting projects within deer and elk management areas. Reporting will be annual.

References

Davis, R. J., B. Hollen, J. Hobson, J. E. Gower, D. Keenum. 2015. Northwest Forest Plan—the first 20 years (1994–2013): status and trends of northern spotted owl habitats. General Technical Report PNW-GTR-XXX. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 51 pp. http://www.reo.gov/monitoring/reports/20yr-report/NSO%20Habitat%2020yr%20Report%20-%20Draft%20for%20web.pdf.

Davis, R. J., J. L. Ohmann, R. E. Kennedy, W. B. Cohen, M. J. Gregory, Z. Yang, H. M. Roberts, A. N. Gray, and T. A. Spies. In press. Northwest Forest Plan–the first 20 years (1994–2013): status and trends of late-successional and old-growth forests. General Technical Report PNWGTR-XXX. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 100 pp. http://www.reo.gov/monitoring/reports/20yr-report/LSOG%2020yr%20Report%20-%20Draft%20for%20web.pdf.

Falxa, G. A., and M. G. Raphael, technical editors. 2015. Northwest Forest Plan—The first 20 years (1994–2013): status and trend of marbled murrelet populations and nesting habitat. General Technical Report PNW-GTR-XXX. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 191 pp. http://www.reo.gov/monitoring/reports/20yr-report/MAMU%20GTR_for%20posting_26May2015.pdf.

Grinspoon, E., D. Jaworski, and R. Phillips. In press. Northwest Forest Plan–The First 20 Years [1994–2013]: Socioeconomic Monitoring. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 84 pp. http://www.reo.gov/monitoring/reports/20yr-report/20150511NWFP%20Soc%20Econ%20FinalFullReport.pdf.

Miller, S. A., S. N Gordon, P. Eldred, R. M. Beloin, S. Wilcox, M. Raggon, H. Andersen, and A. Muldoon. 2015. Northwest Forest Plan–The first 20 years (1994–2013): watershed condition status and trend. General Technical Report PNW-GTR-932. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 90 pp. http://www.reo.gov/monitoring/reports/20yr-report/GTR_AREMP_DRAFT_MAY_2015.pdf.

Page-Dumroese, D. A., A. M. Abbott, and T. M. Rice. 2009a. Forest soil disturbance monitoring protocol—Volume 1: Rapid assessment. General Technical Report WO-82a. USDA Forest Service, Rocky Mountain Research Station, Moscow, ID. 35 pp. http://www.fs.fed.us/rm/pubs_other/wo_gtr082a.pdf.

---. 2009b. Forest soil disturbance monitoring protocol, Volume 2: Supplementary methods, statistics, and data collection. General Technical Report WO-82b. USDA Forest Service, Rocky Mountain Research Station, Moscow, ID. 70 pp. http://www.fs.fed.us/rm/pubs_other/wo_gtr082b.pdf.

USDI BLM. 2004. Final - Supplemental EIS Management of Port-Orford-cedar in Southwest Oregon. SEIS. Portland, OR.

---. 2016. Proposed RMP/Final EIS for the Resource Management Plans for Western Oregon. Oregon State Office, Portland, OR.

Vinyeta, K., and K. Lynn. 2015. Strengthening the Federal-Tribal Relationship: A Report on Monitoring Consultation under the Northwest Forest Plan. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. 82 pp. http://www.reo.gov/monitoring/reports/20yr-report/NWFP%20-%20Strengthing%20the%20Federal-Tribal%20Relationship%20WEB.pdf.

Appendix C – Best Management Practices

Introduction

A Best Management Practice (BMP) is a practice or combination of practices that have been determined to be the most effective and practicable in preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals (40 CFR 130.2 (m)). The use of BMPs is required by the Clean Water Act (33 U.S.C 1251 *et seq*.) to reduce nonpoint source pollution to the maximum extent practicable. Nonpoint source pollution is defined as pollutants detected in waterbodies, such as a streams or lakes, which come from the landscape in a dispersed manner. The BMPs are the primary controls for achieving Oregon's water quality standards pertaining to nonpoint source pollution. Oregon's narrative and numeric criteria within water quality standards are designed to protect designated beneficial uses such as salmonid spawning and rearing, resident fish and aquatic life, domestic water supplies, and water-contact recreation.

The BLM is responsible for implementing BMPs on the lands the BLM administers.[47] The BMPs provide compliance with the Clean Water Act of 1972, as amended, State of Oregon water quality legislation (Chapter 340), and the O&C Act. For actions implemented consistent with the approved RMP, the BLM will design and implement BMPs in a manner that is consistent with the ODEQ Memorandum of Understanding (ODEQ and USDI BLM 2011), and with the Clean Water Act.

The BLM's and ODEQ's strategy for managing and controlling nonpoint source water pollution from BLM-administered lands in the State of Oregon is managed through a Memorandum of Understanding between the two agencies (ODEQ and USDI BLM 2011). This MOU defines the process by which the BLM and ODEQ will cooperatively meet State and Federal water quality rules and regulations. The physical, chemical, and biological conditions of 'waters of the State' that support beneficial uses[48] will be protected, restored, and maintained by working in a proactive, collaborative, and adaptive manner. The MOU specifies that the BLM will implement site-specific BMPs as specified in management objectives, standards, guidelines, design features, and mitigation developed in RMPs, RMP amendments, project-level plans, and Water Quality Restoration Plans to meet applicable water quality standards. The MOU requires monitoring to ensure that practices are properly designed and applied, to determine the effectiveness of practices in meeting water quality standards, and to provide for adjustment of BMPs when it is found that water quality standards are not being protected.

The RMP contains measures in both management direction and BMPs to prevent and reduce the amount of pollution generated by non-point sources to a level compatible with water quality goals. Where a specific measure applies to all actions on all sites (either in a specific land use

[47] The ODEQ has granted Designated Management Agency status to the BLM through a Memorandum of Understanding (ODEQ and USDI BLM 2011).

[48] Beneficial uses are defined in Oregon Revised Statute (ORS), Chapter 468B Water Quality, and Oregon Administrative Rules (OAR), Division 41.

allocation or across the decision area), the BLM presents the measure as management direction.[49] Where the applicability of a specific measure depends upon site-specific conditions, technical feasibility, resource availability, and the water quality of those waterbodies potentially affected, the BLM presents the measure as a BMP. This appendix only lists the BMPs, which must be considered together with the management direction for land use allocations and resource programs contained in the Resource Management Plan.

The BMPs described in this appendix are methods, measures, or practices selected based on site-specific conditions to ensure that the BLM will maintain water quality at its highest practicable level to meet water quality standards and TMDL load allocations as set by ODEQ. These site-specific BMPs are a compilation of commonly employed practices developed through professional experience or research, and designed to minimize water quality degradation and loss of soil productivity. The BMPs include, but are not limited to, avoidance, structural and nonstructural treatments, operations, and maintenance procedures. Although normally preventative, BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (40 CFR 130.2, EPA Water Quality Standards Regulation). The implementation of these BMPs will be the beginning of an iterative process that includes the monitoring and modification of BMPs, where needed, to achieve water quality goals. This cyclic process will be the primary mechanism to achieve Oregon's water quality standards.

The BMPs described in this appendix also include methods, measures, or practices to ensure that the BLM will implement actions related to stream crossings consistent with state fish passage criteria (OAR 635-412-0035 (3)) and, for streams with ESA-listed fish, with the fish passage criteria in the biological opinion on Reinitiation of the Endangered Species Act Section 7 Formal Programmatic Conference and Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Aquatic Restoration Activities in the States of Oregon and Washington (ARBO II) (USDC NMFS 2013). The primary method for implementing state fish passage laws shall be through active collaboration and cooperation between the BLM and the Oregon Department of Fish and Wildlife (ODFW).

For vegetation treatments using herbicides on BLM-administered lands in the decision area, BMPs are included in Vegetation Treatments Using Herbicides on BLM Lands in Oregon Record of Decision (USDI BLM 2010) as mitigation measures and standard operating practices, and are incorporated here by reference. Briefly, mitigation and standard operating procedures in Attachment A; General, Soil, Water Resources, Wetlands and Riparian Areas, Fish and Other Aquatic Organisms, Recreation and other beneficial uses and values (pp. 33–45), and additional mitigation measures (pp. 13–15) are considered BMPs for herbicide treatments. For other management activities, including minerals exploration and development, linear transmission projects, and most hazardous materials, the mechanism to achieve Oregon State Water Quality Standards will be guided by RMP management direction, regulations, or project-level design features, and not necessarily be covered by the BMPs contained in this RMP. For example, management of locatable minerals is governed by regulations found in 43 CFR 3809. The BMPs

[49] Management direction is listed in the RMP by land use allocation and by resource programs, and identifies where future actions may or may not be allowed and what restrictions or requirements may be placed on those future actions to achieve the objectives set for the BLM-administered lands and resources.

for locatable minerals include language from 43 CFR 3809 that requires operators to prevent unnecessary and undue degradation from mining operations, as defined in 43 CFR 3809.5 and 43 CFR 3809.415.

Selection and Application of BMPs

For actions implemented consistent with this RMP, BLM decision-makers will select the appropriate and applicable BMPs, using input from BLM staff. The BLM will select BMPs based upon site-specific conditions, technical feasibility, resource availability, and the water quality of those waterbodies potentially impacted. Not all of the BMPs listed will be selected for any specific management action. The BMPs below do not provide an exhaustive list of nonpoint source control measures. The BLM may identify additional nonpoint source control measures during project-level planning and analysis. The BLM will apply the selected BMPs in a manner that will be in conformance with all RMP management direction.

The BMPs that relate to instream activities may coincidently be similar to applicable practices specified in applicable permits, such as Army Corps of Engineers and Department of State Lands joint removal/fill permits, ODEQ water quality permits and 401 certifications, or project design criteria contained in biological assessments. The BMPs in the following tables are not specific permit requirements, but rather demonstrate the process by which the BLM will control nonpoint source pollution from instream activities.

Monitoring and Adjustment

The BLM will monitor the application of BMPs through implementation and effectiveness monitoring. Post-project implementation monitoring of selected BMPs will evaluate whether the BLM has carried forward BMPs from the project-level plans. Effectiveness monitoring will evaluate whether implementing selected BMPs has met water quality standards and criteria and assured protection of beneficial uses. The BLM will modify BMPs if monitoring demonstrates that water quality standards are not being protected. The BLM will make changes to individual BMPs, or additions or deletions to the BMP lists below, through plan maintenance, consistent with 43 CFR 1610.5–4.

BMP Lists

Table C-1 through **Table C-11** are organized by core activities on BLM-administered lands in the decision area. For each core activity, the table displays the sequential number and BMP in the left columns, the source or reference in the center column, and the applicable ODEQ narrative or numeric water quality standards in the right column. The table identifies the ODEQ Oregon Administrative Rules (OAR) number(s) in the right column and provides OAR references within the roads and landings section, to compare these BMPs to similar ODF or ODFW OARs. See the OARs on water pollution (ODEQ OARs, Division 41, 2015) for additional details about the standards and regulations that are associated with the BMPs.

Core activities with BMPs include:

- Road and landing maintenance and construction
- Timber harvest activities
- Silvicultural activities

- Fire and fuels management
- Surface source water for drinking water
- Recreation management
- Minerals (salable) development
- Spill prevention and abatement
- Restoration activities

The following lists of BMPs are not intended to be all-inclusive nor replace site-specific project planning, which may require the use of different or additional BMPs.

Roads and Landings

Table C-1. Best management practices for roads and landings.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
General Construction			
R 01	Locate temporary and permanent roads and landings on stable locations, e.g., ridge tops, stable benches, or flats, and gentle-to-moderate side slopes. Minimize road construction on steep slopes (> 60 percent).	USDI BLM 2008, Appendix I – Water, R 1, p. 270 OAR 629-625-0200 (3)	OAR 629-625-0200–ODF, Road Location ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 02	Locate temporary and permanent road construction or improvement to minimize the number of stream crossings.	USDI BLM 2008, Appendix I – Water, R 2, p. 270 OAR 629-625-0200 (3-4)	OAR 629-625-0200–ODF, Road Location ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 03	Locate roads and landings away from wetlands, Riparian Reserve, floodplains, and waters of the State, unless there is no practicable alternative. Avoid locating landings in areas that contribute runoff to channels.	USDI BLM 2008, Appendix I – Water, R 4, p. 270 OAR 629-625-0200 (2)	OAR 629-625-0200–ODF, Road Location ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 04	Locate roads and landings to reduce total transportation system mileage. Renovate or improve existing roads or landings when it would cause less adverse environmental impact than new construction. Where roads traverse land in another ownership, investigate options for using those roads before constructing new roads.	USDI BLM 2008, Appendix I – Water, R 2, p. 270 EPA 2005, p. 3-12, Bullet 1 OAR 629-625-0200 (5) EPA 2005, p. 3-10, Bullet 1	OAR 629-625-0200–ODF, Road Location ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 05	Design roads to the minimum width needed for the intended use as referenced in BLM Manual 9113 – 1 – Roads Design Handbook (USDI BLM 2011).	USDI BLM 2008, Appendix I – Water, R 8, p. 271 OAR 629-625-0310 (3)	OAR 629-625-0310-ODF, Road Prism ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 06	Confine pioneer roads (i.e., clearing and grubbing of trees, stumps and boulders along a route) to the construction limits of the permanent roadway to reduce the amount of area disturbed and avoid deposition in wetlands, Riparian Reserve, floodplains, and waters of the State. Install temporary drainage, erosion, and sediment control structures, as needed to prevent sediment delivery to streams. Storm proof or close pioneer roads prior to the onset of the wet season.	USDI BLM 2008, Appendix I – Water, R 11, p. 271 EPA 2005, p. 3-41, Bullet 2	OAR 629-625-0410-ODF, Disposal of Waste Materials ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 07	Design road cut and fill slopes with stable angles, to reduce erosion and prevent slope failure.	USDI BLM 2008, Appendix I – Water, R 3, p. 270 EPA 2005	OAR 629-625-0310-ODF, Road Prism ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 08	End-haul material excavated during construction, renovation, or maintenance where side slopes generally exceed 60 percent and any slope where side-cast material may enter wetlands, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 10, p. 271 EPA 2005, p. 3-12, Bullet 5	OAR 629-625-0310-ODF, Road Prism ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 09	Construct road fills to prevent fill failure using inorganic material, compaction, buttressing, sub-surface drainage, rock facing, or other effective means.	USDI BLM 2008, Appendix I – Water, R 13, p. 271. OAR 629-625-0310-5	OAR 629-625-0310-ODF, Road Prism ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 10	Design and construct sub-surface drainage (e.g., trench drains using geo-textile fabrics and drain pipes) in landslide-prone areas and saturated soils. Minimize or avoid new road construction in these areas.	USDI BLM 2008, Appendix I – Water, R 19, p. 272 ODEQ 2005, RC-1, RC-6, pp.4-5, 4-6	OAR 629-625-0300-ODF, Road Design ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 11	Locate waste disposal areas outside wetlands, Riparian Reserve, floodplains, and unstable areas to minimize risk of sediment delivery to waters of the State. Apply surface erosion control prior to the wet season. Prevent overloading areas, which may become unstable.	USDI BLM 2008, Appendix I – Water, R 80, p. 281 OAR 629-625-0340	OAR 629-625-0340-ODF, Waste Disposal Areas ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 12	Use controlled blasting techniques to minimize loss of material on steep slopes or into wetlands, Riparian Reserve, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 12, p. 271	OAR 629-625-0410-ODF, Disposal of Waste Materials ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 13	Use temporary sediment control measures (e.g., check dams, silt fencing, bark bags, filter strips, and mulch) to slow runoff and contain sediment from road construction areas. Remove any accumulated sediment and the control measures when work or haul is complete. When long-term structural sediment control measures are incorporated into the final erosion control plan, remove any accumulated sediment to retain capacity of the control measure.	USDI BLM 2008, Appendix I – Water, R 14, p. 271 ODEQ 2005, RC-11	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 14	Avoid use of road fills for water impoundment dams unless specifically designed for that purpose. Impoundments over 9.2-acre-feet or 10 feet in depth will require a dam safety assessment by a registered engineer. Upgrade existing road fill impoundments to withstand a 100-year flood event.	OAR 629-625-0310-5	OAR 629-625-0310-ODF, Road Prism ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Permanent Stream Crossings			
R 15	Minimize fill volumes at permanent and temporary stream crossings by restricting width and height of fill to amounts needed for safe travel and adequate cover for culverts. For deep fills (generally greater than 15 feet deep), incorporate additional design criteria (e.g., rock blankets, buttressing, bioengineering techniques) to reduce the susceptibility of fill failures.	USDI BLM 2008, Appendix I – Water, R 47, p. 276 OAR 629-625-0320 (1b)	OAR 629-625-0320-ODF, Stream Crossing Structures ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 16	Locate stream-crossing culverts on well-defined, unobstructed, and straight reaches of stream. Locate these crossings as close to perpendicular to the streamflow as stream allows. When structure cannot be aligned perpendicular, provide inlet and outlet structures that protect fill, and minimize bank erosion. Choose crossings that have well-defined stream channels with erosion-resistant bed and banks.	USDI BLM 2008, Appendix I – Water, R 48, p. 276 EPA 2005, p. 3-14 Gesford and Anderson 2006, pp. 5–30	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 17	On construction of a new culvert, major replacement, or fundamental change in permit status of a culvert in streams containing native migratory fish, install culverts consistent with ODFW fish passage criteria (OAR 635-412-0035 (3)), and at the natural stream grade, unless a lessor gradient is required for fish passage. On abandonment of a culvert (i.e., removal of a culvert without replacement) in streams containing native migratory fish, restore the natural stream grade, unless a lessor gradient is required for fish passage. On construction of new culverts in streams with ESA listed fish, stream crossings must also meet ARBO II (USDC NMFS 2013 and USDI FWS 2013) fish passage criteria and state fish passage criteria.	USDI BLM 2008, Appendix I – Water, R 49, p. 276	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 18	Design stream crossings to minimize diversion potential in the event that the crossing is blocked by debris during storm events. This protection could include hardening crossings, armoring fills, dipping grades, oversizing culverts, hardening inlets and outlets, and lowering the fill height.	USDI BLM 2008, Appendix I – Water, R 53, p. 277	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 19	Design stream crossings to prevent diversion of water from streams into downgrade road ditches or down road surfaces.	USDI BLM 2008, Appendix I – Water, R 31, p. 274 OAR 629-625-0330 (3)	OAR 629-625-0330-ODF, Drainage OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 20	Place instream grade control structures above or below the crossing structure, if necessary, to prevent stream head cutting, culvert undermining and downstream sedimentation. Employ bioengineering measures to protect the stability of the streambed and banks.	ODEQ 2005 , RC - 2 Gesford and Anderson 2006, pp 5–31 USDA FS 2002 Chapter 20	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 21	Prevent culvert plugging and failure in areas of active debris movement with measures such as beveled culvert inlets, flared inlets, wingwalls, over-sized culverts, trash racks, or slotted risers.	USDI BLM 2008, Appendix I – Water, R 59, p. 278	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 22	To reduce the risk of loss of the road crossing structure and fill causing excessive sedimentation, use bridges or low-water fords when crossing debris-flow susceptible streams. Avoid using culverts when crossing debris-flow susceptible streams, when practicable.	USDI BLM 2008, Appendix I – Water, R 70, p. 280	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 23	Utilize stream diversion and isolation techniques when installing stream crossings. Evaluate the physical characteristics of the site, volume of water flowing through the project area, and the risk of erosion and sedimentation when selecting the proper techniques.	USDI BLM 2008, Appendix I – Water, R 50, R 51, p. 277	OAR 629-625-0430-ODF, Stream Protection OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 24	Limit activities and access points of mechanized equipment to streambank areas or temporary platforms when installing or removing structures. Keep equipment activity in the stream channel to an absolute minimum.	USDI BLM 2008, Appendix I – Water, R 52, p. 277 OAR 629-625-0430 (2)	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 25	Install stream crossing structures before heavy equipment moves beyond the crossing area.	USDI BLM 2008, Appendix I – Water, R 60, p. 278	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 26	Disconnect road runoff to the stream channel by outsloping the road approach. If outsloping is not practicable, use runoff control, erosion control and sediment containment measures. These may include using additional cross drain culverts, ditch lining, and catchment basins. Prevent or reduce ditch flow conveyance to the stream through cross drain placement above the stream crossing.	USDI BLM 2008, Appendix I – Water, R 26, p. 273, R 33 p. 274 Gesford and Anderson 2006, pp. 5–22 OAR 629-625-0330 (4)	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
Temporary Stream Crossings for Roads and Skid Trails			
R 27	When installing temporary culverts, use washed rock as a backfill material. Use geotextile fabric as necessary where washed rock will spread with traffic and cannot be practicably retrieved.	USDI BLM 2008, Appendix I – Water, R 63, p. 279 ODEQ 2005, NS-3	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 28	Use no-fill structures (e.g., portable mats, temporary bridges, and improved hardened crossings) for temporary stream crossings. When not practicable, design temporary stream crossings with the least amount of fill and construct with coarse material to facilitate removal upon completion.	OAR 629-625-0320 (2)	OAR 629-625-0320-ODF, Stream Crossing Structures OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 29	Remove temporary crossing structures promptly after use. Follow practices under the Closure/Decommissioning section for removing stream crossing drainage structures and reestablishing the natural drainage.	USDI BLM 2008, Appendix I – Water, R 65, p. 279 OAR 629-625-0430 (5)	OAR 629-625-0430-ODF, Stream Protection OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Surface Drainage			
R 30	Effectively drain the road surface by using crowning, insloping or outsloping, grade reversals (rolling dips), and waterbars or a combination of these methods. Avoid concentrated discharge onto fill slopes unless the fill slopes are stable and erosion-resistant.	USDI BLM 2008, Appendix I – Water, R 22, p. 272 EPA 2005, p. 3-41	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 31	Outslope temporary and permanent low volume roads to provide surface drainage on road gradients up to 6 percent unless there is a traffic hazard from the road shape.	USDI BLM 2008, Appendix I – Water, R 23, R 24, p. 273 EPA 2005, p. 3-42 USDA FS 2002 Chapter 13	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 32	Consider using broad-based drainage dips or lead-off ditches in lieu of cross drains for low volume roads. Locate these surface water drainage measures where they will not drain into wetlands, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 25, R 26, p. 273 EPA 2005, pp. 3-41 – 3-45 USDA FS 2002 Chapter 13	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 33	Avoid use of outside road berms unless designed to protect road fills from runoff. If road berms are used, breach to accommodate drainage where fill slopes are stable.	USDI BLM 2008, Appendix I – Water, R 27, p. 273 Gesford and Anderson 2006, pp. 3–7	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 34	Construct variable road grades and alignments (e.g., roll the grade and grade breaks) which limit water concentration, velocity, flow distance, and associated stream power.	USDI BLM 2008, Appendix I – Water, R 28, p. 273 Gesford and Anderson 2006, pp. 5–20 OAR 629-625-0310 (1)	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 35	Install underdrain structures when roads cross or expose springs, seeps, or wet areas rather than allowing intercepted water to flow down gradient in ditchlines.	USDI BLM 2008, Appendix I – Water, R 29, p. 273 OAR 629-625-0330 (5)	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 36	Design roads crossing low-lying areas so that water does not pond on the upslope side of the road. Provide cross drains at short intervals to ensure free drainage.	USDI BLM 2008, Appendix I – Water, R 19, p. 272 EPA 2005, p. 3-14, Bullet 1	OAR 629-625-0320-ODF, Stream Crossing Structures ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 37	Divert road and landing runoff water away from headwalls, slide areas, high landslide hazard locations, or steep erodible fill slopes.	USDI BLM 2008, Appendix I – Water, R 29, p. 273 OAR 629-625-0330 (2)	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 38	Design landings to disperse surface water to vegetated stable areas.	USDI BLM 2008, Appendix I – Water, R 30, p. 274	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
Cross Drains			
R 39	Locate cross drains to prevent or minimize runoff and sediment conveyance to waters of the State. Implement sediment reduction techniques such as settling basins, brush filters, sediment fences, and check dams to prevent or minimize sediment conveyance. Locate cross drains to route ditch flow onto vegetated and undisturbed slopes.	USDI BLM 2008, Appendix I – Water, R 33, p. 274 OAR 629-625-0330 (4)	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 40	Space cross drain culverts at intervals sufficient to prevent water volume concentration and accelerated ditch erosion. At a minimum, space cross drains at intervals referred to in the BLM Road Design Handbook 9113-1 (USDI BLM 2011), Illustration 11 –'Spacing for Drainage Lateral.' Increase cross drain frequency through erodible soils, steep grades, and unstable areas.	USDI BLM 2008, Appendix I – Water, R 34, p. 274	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 41	Choose cross drain culvert diameter and type according to predicted ditch flow, debris and bedload passage expected from the ditch. Minimum diameter is 18".	USDI BLM 2008, Appendix I – Water, R 35, p. 274 Johansen *et al*. 1997, p. 3	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 42	Locate surface water drainage measures (e.g., cross drain culverts, rolling dips and water bars) where water flow will be released on convex slopes or other stable and non-erosive areas that will absorb road drainage and prevent sediment flows from reaching wetlands, floodplains, and waters of the State. Where practicable locate surface water drainage structures above road segments with steeper downhill grade. Locate cross drains at least 50 feet from the nearest stream crossing and allow for a sufficient non-compacted soil and vegetative filter.	USDI BLM 2008, Appendix I – Water, R 26, p. 273 Johansen *et al*. 1997, p. 3	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 43	Armor surface drainage structures (e.g., broad based dips and lead-off ditches) to maintain functionality in areas of erosive and low-strength soils.	USDI BLM 2008, Appendix I – Water, R 38, p. 275	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 44	Discharge cross drain culverts at ground level on non-erodible material. Install downspout structures or energy dissipaters at cross drain outlets or drivable dips where alternatives to discharging water onto loose material, erodible soils, fills, or steep slopes are not available.	USDI BLM 2008, Appendix I – Water, R 39, R 40, p. 275 ODEQ 2005, RC-2 Gesford and Anderson 2006, pp. 5–31	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 45	Cut protruding 'shotgun' culverts at the fill surface or existing ground. Install downspout or energy dissipaters to prevent erosion.	USDI BLM 2008, Appendix I – Water, R 41, p. 275	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 46	Skew cross drain culverts 45–60 degrees from the ditchline and provide pipe gradient slightly greater than ditch gradient to reduce erosion at cross drain inlet.	BLM Road Design Handbook H9113-1 2009	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 47	Provide for unobstructed flow at culvert inlets and within ditch lines during and upon completion of road construction prior to the wet season.	OAR 629-625-0420	OAR 629-625-0330-ODF, Drainage ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
Timing of In-water Work			
R 48	Conduct all nonemergency in-water work during the ODFW instream work window, unless a waiver is obtained from permitting agencies. Avoid winter sediment and turbidity entering streams during in-water work to the extent practicable.	USDI BLM 2008, Appendix I – Water, R 44, p. 276, R 65, p. 279 Oregon guidelines for timing of in-water work to protect fish and wildlife resources ODFW 2008 OAR 629-625-0430	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 49	Remove stream crossing culverts and entire in-channel fill material during ODFW instream work period.	USDI BLM 2008, Appendix I – Water, R 93, p. 283 Oregon guidelines for timing of in-water work to protect fish and wildlife resources ODFW 2008	OAR 629-625-0650-ODF,Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Low-water Ford Stream Crossings			
R 50	Harden low-water ford approaches with durable materials. Provide cross drainage on approaches. Limit ford crossings to the ODFW instream work period.	USDI BLM 2008, Appendix I – Water, R 67, p. 279 EPA 2005, p. 3-50	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 51	Restrict access to unimproved low-water stream crossings.	USDI BLM 2008, Appendix I – Water, R 69, p. 280 OAR 629-625-0430 (5)	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 52	Use permanent low-water fords (e.g., concrete and well-anchored concrete mats) in debris-flow susceptible streams.	USDI BLM 2008, Appendix I – Water, R 70, p. 280. EPA 2005, p. 3-50	OAR 629-625-0320-ODF, Stream Crossing Structures ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
Maintaining Water Quality - Non-native Invasive Plants, including Noxious Weeds			
R 53	Locate equipment-washing sites in areas with no potential for runoff into wetlands, Riparian Reserve, floodplains, and waters of the State. Do not use solvents or detergents to clean equipment on site.	USDI BLM 2008, Appendix I – Water, R 75, p. 280 ODEQ 2005, NS-5	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
Water Source Development and Use			
R 54	Limit disturbance to vegetation and modification of streambanks when locating road approaches to in-stream water source developments. Surface these approaches with durable material. Employ erosion and runoff control measures.	USDI BLM 2008, Appendix I – Water, R 102, p. 285	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 55	Direct pass-through flow or overflow from in-channel and any connected off-channel water developments back into the stream.	USDI BLM 2008, Appendix I – Water, R 104, p. 285	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 56	Direct overflow from water harvesting ponds to a safe non-eroding dissipation area, and not into a stream channel.	USDI BLM 2008, Appendix I – Water, R 105, p. 285	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 57	Limit the construction of temporary in-channel water drafting sites. Develop permanent water sources outside of stream channels and wetlands.	USDI BLM 2008, Appendix I – Water, R 106, p. 286 ODEQ 2005, NS-1	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 58	Do not place pump intakes on the substrate or edges of the stream channel. When placing intakes instream, place on hard surfaces (e.g., shovel and rocks) to minimize turbidity. Use a temporary liner to create intake site. After completion of use, remove liner and restore channel to natural condition.	USDI BLM 2008, Appendix I – Water, R 107, p. 286 ODEQ 2005, NS-1	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 59	Do not locate placement of road fill in the proximity of a public water supply intake (404(f) exemption criteria xi) in waters of the State.	USACOE (1972) 404(f) exemption criteria xi	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 60	Avoid water withdrawals from fish-bearing streams whenever practicable. Limit water withdrawals in ESA-listed fish habitat and within 1,500 feet of ESA-listed fish habitat to 10 percent of stream flow or less at the point of withdrawal, and in non-ESA-listed fish habitat to 50 percent or less at the point of withdrawal, based on a visual assessment by a fish biologist or hydrologist. The channel must not be dewatered to the point of isolating fish.	USDC NMFS 2013 ARBO II, p. 43 (NWR-2013-9664) USDA FS 2012, p. 146	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011
Erosion Control Measures			
R 61	During roadside brushing, remove vegetation by cutting rather than uprooting.	OAR 629-625-0430 (4)	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 62	Limit road and landing construction, reconstruction, or renovation activities to the dry season. Keep erosion control measures concurrent with ground disturbance to allow immediate stormproofing.	USDI BLM 2008, Appendix I – Water, R 9, p. 271	OAR 629-625-0440-ODF, Stabilization ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 63	Apply native seed and certified weed-free mulch to cut and fill slopes, ditchlines, and waste disposal sites with the potential for sediment delivery to wetlands, Riparian Reserve, floodplains and waters of the State. If needed to promote a rapid ground cover and prevent aggressive invasive plants, use interim erosion control non-native sterile annuals before attempting to restore natives. Apply seed upon completion of construction and as early as practicable to increase germination and growth. Reseed if necessary to accomplish erosion control. Select seed species that are fast-growing, provide ample ground cover, and have adequate soil-binding properties. Apply mulch that will stay in place and at site-specific rates to prevent erosion.	USDI BLM 2008, Appendix I – Water, R 17, p. 272	OAR 629-625-0440-ODF, Stabilization ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 64	Place sediment-trapping materials or structures such as straw bales, jute netting, or sediment basins at the base of newly constructed fill or side slopes where sediment could be transported to waters of the State. Keep materials away from culvert inlets or outlets.	USDI BLM 2008, Appendix I – Water, R 14, p. 271, R 21, p. 272 USDA FS 2002 Chapter 18	OAR 629-625-0440-ODF, Stabilization ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 65	Use biotechnical stabilization and soil bioengineering techniques to control bank erosion (e.g., commercially produced matting and blankets, live plants or cuttings, dead plant material, rock, and other inert structures).	USDI BLM 2008, Appendix I – Water, R 54, p. 277 USDA FS 2002, Chapters 18 and 20	OAR 629-625-0440-ODF, Stabilization ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 66	Suspend ground-disturbing activity if projected forecasted rain will saturate soils to the extent that there is potential for movement of sediment from the road to wetlands, floodplains, and waters of the State. Cover or temporarily stabilize exposed soils during work suspension. Upon completion of ground-disturbing activities, immediately stabilize fill material over stream crossing structures. Measures could include but are not limited to erosion control blankets and mats, soil binders, soil tackifiers, or placement of slash.	USDI BLM 2008, Appendix I – Water, R 57, p. 278, R 88, p. 282	OAR 629-625-0440-ODF, Stabilization ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 67	Apply fertilizer in a manner to prevent direct fertilizer entry to wetlands, Riparian Reserve, floodplains, and waters of the State.	OAR 629-625-0440 Aquatic Resources Biological Opinion NMFS-ARBO 2013	OAR 629-625-0440-ODF, Stabilization ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Road Use and Dust Abatement			
R 68	Apply water or approved road surface stabilizers/dust control additives to reduce surfacing material loss and buildup of fine sediment that can enter into wetlands, floodplains and waters of the State. Prevent entry of road surface stabilizers/dust control additives into waters of the State during application. For dust abatement, limit applications of lignin sulfonate to a maximum rate of 0.5 gal/yd^2 of road surface, assuming a 50:50 (lignin sulfonate to water) solution.	USDI BLM 2008, Appendix I – Water, R 76, p. 281 ODEQ 2005, EP-13 Western Oregon Programmatic 2011	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
Road Maintenance			
R 69	Prior to the wet season, provide effective road surface drainage maintenance. Clear ditch lines in sections where there is lowered capacity or is obstructed by dry ravel, sediment wedges, small failures, or fluvial sediment deposition. Remove accumulated sediment and blockages at cross-drain inlets and outlets. Grade natural surface and aggregate roads where the surface is uneven from surface erosion or vehicle rutting. Restore crowning, outsloping or insloping for the road type for effective runoff. Remove or provide outlets through berms on the road shoulder. After ditch cleaning prior to hauling, allow vegetation to reestablish or use sediment entrapment measures (e.g., sediment trapping blankets and silt fences).	USDI BLM 2008, Appendix I – Water, R 81, R 84, R 85, p. 281 OAR 629-625 0600 (2-4) EPA 2005, pp. 3-61 – 3-62	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 70	Retain ground cover in ditch lines, except where sediment deposition or obstructions require maintenance.	USDI BLM 2008, Appendix I – Water, R 86, p. 282	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 71	Maintain water flow conveyance, sediment filtering and ditch line integrity by limiting ditch line disturbance and groundcover destruction when machine cleaning within 200 feet of road stream crossings.	USDA FS 2012, pp. 113–114. EPA 2005, p. 3-62	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 72	Avoid undercutting of cut-slopes when cleaning ditch lines.	USDI BLM 2008, Appendix I – Water, R 78, p. 281 EPA 2005, p. 3-62	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 73	Remove and dispose of slide material when it is obstructing road surface and ditch line drainage. Place material on stable ground outside of wetlands, Riparian Reserve, floodplains, and waters of the State. Seed with native seed and weed-free mulch.	USDI BLM 2008, Appendix I – Water, R 79, p. 281 OAR 629-625-0600 (6)	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 74	Do not sidecast loose ditch or surface material where it can enter wetlands, Riparian Reserve, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 80, p. 281 OAR 629-625-0600 (7)	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 75	Retain low-growing vegetation on cut-and-fill slopes.	USDI BLM 2008, Appendix I – Water, R 86, p. 282 EPA 2005, EP-6	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 76	Seed and mulch cleaned ditch lines and bare soils that drain directly to wetlands, floodplains, and waters of the State, with native species and weed-free mulch.	USDI BLM 2008, Appendix I – Water, R 78, p. 281	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
Road Stormproofing			
R 77	Inspect and maintain culvert inlets and outlets, drainage structures and ditches before and during the wet season to diminish the likelihood of plugged culverts and the possibility of washouts.	USDI BLM 2008, Appendix I – Water, R 81, R 82, p. 281 OAR 629-625-0600 (3)	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 78	Repair damaged culvert inlets and downspouts to maintain drainage design capacity.	USDI BLM 2008, Appendix I – Water, R 82, p. 281 OAR 629-625-0600 (3)	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 79	Blade and shape roads to conserve existing aggregate surface material, retain or restore the original cross section, remove berms and other irregularities that impede effective runoff or cause erosion, and ensure that surface runoff is directed into vegetated, stable areas.	USDI BLM 2008, Appendix I – Water, R 84, p. 281 OAR 629-625-0600 (4)	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 80	Stormproof open resource roads receiving infrequent maintenance to reduce road erosion and reduce the risk of washouts by concentrated water flows. Stormproof temporary roads if retained over winter.	USDI BLM 2008, Appendix I – Water, R 87, p. 282 OAR 629-625-0600 (2)	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 81	Suspend stormproofing/ decommissioning operations and cover or otherwise temporarily stabilize all exposed soil if conditions develop that cause a potential for sediment-laden runoff to enter a wetland, floodplain, or waters of the State. Resume operations when conditions allow turbidity standards to be met.	USDI BLM 2008, Appendix I – Water, R 88, p. 282	OAR 629-625-0600-ODF, Road Maintenance ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Road Closure and Decommissioning			
R 82	Inspect closed roads to ensure that vegetation stabilization measures are operating as planned, drainage structures are operational, and non-native invasive plants, including noxious weeds, are not providing erosion control. Conduct vegetation treatments and drainage structure maintenance as needed.	OAR 629-625-0650 (2)	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 83	Decommission temporary roads upon completion of use.	USDI BLM 2008, Appendix I – Water, R 90, p. 283	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 84	Prevent use of vehicular traffic utilizing methods such as gates, guard rails, earth/log barricades, to reduce or eliminate erosion and sedimentation due to traffic on roads.	USDI BLM 2008, Appendix I – Water, R 91, p. 283 OAR 629-625-0650 (2)	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 85	Convert existing drainage structures such as ditches and cross drain culverts to a long-term maintenance free drainage configuration such as an outsloped road surface and waterbars.	USDI BLM 2008, Appendix I – Water, R 92, p. 283 OAR 629-625-0650 (3)	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 86	Place and remove temporary stream crossings during the dry season, without overwintering, unless designed to accommodate a 100-year flood event. See also R 49.	OAR 629-625-0430 (5)	OAR 629-625-0430-ODF, Stream Protection ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
R 87	Place excavated material from removed stream crossings on stable ground outside of wetlands, Riparian Reserve, floodplains, and waters of the State. In some cases, the material could be used for recontouring old road cuts or be spread across roadbed and treated to prevent erosion.	USDI BLM 2008, Appendix I – Water, R 94, p. 284	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 88	Reestablish stream crossings to the natural stream gradient. Excavate sideslopes back to the natural bank profile. Reestablish natural channel width and floodplain.	USDI BLM 2008, Appendix I – Water, R 95, p. 284	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 89	Install cross ditches or waterbars upslope from stream crossing to direct runoff and potential sediment to the hillslope rather than deliver it to the stream.	USDI BLM 2008, Appendix I – Water, R 96, p. 284 OAR 629-625-0650 (3)	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 90	Following culvert removal and prior to the wet season, apply erosion control and sediment trapping measures (e.g., seeding, mulching, straw bales, jute netting, and native vegetative cuttings) where sediment can be delivered into wetlands, Riparian Reserve, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 97, p. 284 OAR 629-625-0650 (3)	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 91	Implement tillage measures, including ripping or subsoiling to an effective depth. Treat compacted areas including the roadbed, landings, construction areas, and spoils sites.	USDI BLM 2008, Appendix I – Water, R 98, p. 285	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 92	After tilling the road surface, pull back unstable road fill and end-haul or contour to the natural slopes.	USDI BLM 2008, Appendix I – Water, R 99, p. 285	OAR 629-625-0650-ODF, Vacating Forest Roads ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
Wet-season Road Use			
R 93	On active haul roads, during the wet season, use durable rock surfacing and sufficient rock depth to resist rutting or development of sediment on road surfaces that drain directly to wetlands, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 71, p. 280 OAR 629-625-0700 (2)	OAR 629-625-0700-ODF, Wet Weather Road Use ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 94	Prior to winter hauling activities, implement structural road treatments such as: increasing the frequency of cross drains, installing sediment barriers or catch basins, applying gravel lifts or asphalt road surfacing at stream crossing approaches, and armoring ditch lines.	USDI BLM 2008, Appendix I – Water, R 72, p. 280 OAR 629-625-0700 (2)	OAR 629-625-0700-ODF, Wet Weather Road Use ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 95	Remove snow on surfaced roads in a manner that will protect the road and adjacent resources. Retain a minimum layer (4") of compacted snow on the road surface. Provide drainage through the snow bank at periodic intervals to allow snowmelt to drain off the road surface.	USDI BLM 2008, Appendix I – Water, R 74, p. 280 BLM snow removal letter	OAR 629-625-0700-ODF, Wet Weather Road Use ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 96	Avoid removing snow from unsurfaced roads where runoff drains to waters of the State.	USDA FS 2012, pp. 120–123 EPA 2005, p. 3-80	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 97	Maintain road surface by applying appropriate gradation of aggregate and suitable particle hardness to protect road surfaces from rutting and erosion under active haul where runoff drains to wetlands, Riparian Reserve, floodplains, and waters of the State.	USDI BLM 2008, Appendix I – Water, R 71, p. 280 OAR 629-625-0700 (2)	OAR 629-625-0700-ODF, Wet Weather Road Use ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
R 98	To reduce sediment tracking from natural surface roads during active haul, provide a gravel approach before entrance onto surfaced roads.	EPA 2005, pp. 3-57 – 3-58	OAR 629-625-0700-ODF, Wet Weather Road Use ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
R 99	Install temporary culverts and washed rock on top of low-water ford to reduce vehicle contact with water during active haul. Remove culverts promptly after use.	USDA FS 2012, pp. 119–120	OAR 629-625-0700-ODF, Wet Weather Road Use ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036

Timber Harvest Activities

Table C-2. Best management practices for timber harvest activities.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Cable Yarding			
TH 01	Design yarding corridors crossing streams to limit the number of such corridors, using narrow widths, and using the most perpendicular orientation to the stream feasible. Minimize yarding corridor widths and space corridors as far apart as is practicable given physical and operational limitations, through practices such as setting limitations on corridor width, corridor spacing, or the amount of corridors in an area. For example, such practices could include, as effective and practicable: – Setting yarding corridors at 12–15 foot maximum widths, and – Setting corridor spacing where they cross the streams to no less than 100 feet apart when physical, topography, or operational constraints demand, with an overall desire to keep an average spacing of 200 feet apart.	USDI BLM 2008, Appendix I – Water, TH 2, p. 287	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
TH 02	Directionally fall trees to lead for skidding and skyline yarding to minimize ground disturbance when moving logs to skid trails and skyline corridors.	USDI BLM 2008, Appendix I – Water, TH 17, p. 289	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 03	Require full suspension over flowing streams, non-flowing streams with highly erodible bed and banks, and jurisdictional wetlands.	USDI BLM 2008, Appendix I – Water, TH 3, p. 287	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 04	When logging downhill into Riparian Reserve, design the logging system to prevent converging yarding trails from intersecting the stream network.	USDI BLM 2008, Appendix I – Water, TH 4, p. 287	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
TH 05	Prevent streambank and hillslope disturbance on steep slopes (generally > 60 percent) by requiring full-suspension within 50 feet of definable stream channels. Yard the remaining areas across the Riparian Reserve using at least one-end suspension.	USDI BLM 2008, Appendix I – Water, TH 5, p. 287	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 06	Implement erosion control measures such as waterbars, slash placement, and seeding in cable yarding corridors where the potential for erosion and delivery to waterbodies, floodplains, and wetlands exists.	USDI BLM 2008, Appendix I – Water, TH 6, p. 288	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
Ground-based Harvesting			
TH 07	Exclude ground-based equipment on hydric soils, defined by the Natural Resources Conservation Service.	USDI BLM 2008, Appendix I – Water, TH 8, p. 288	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 08	Limit designated skid trails for thinning or regeneration harvesting to ≤ 15 percent of the harvest unit area to reduce displacement or compaction to acceptable limits.	Soil Quality Standards USDA FS 1998	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 09	Limit width of skid roads to single width or what is operationally necessary for the approved equipment. Where multiple machines are used, provide a minimum-sized pullout for passing.	USDI BLM 2008, Appendix I – Water, TH 10, p. 288	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 10	Ensure leading-end of logs is suspended when skidding.	USDI BLM 2008, Appendix I – Water, TH 11, p. 288	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 11	Restrict non-road, in unit, ground-based equipment used for harvesting operations to periods of low soil moisture; generally from May 15 to Oct 15. Low soil moisture varies by texture and is based on site-specific considerations. Low soil moisture limits will be determined by qualified specialists to determine an estimated soil moisture and soil texture.[50]	USDI BLM 2008, Appendix I – Water, TH 12, p. 288	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 12	Incorporate existing skid trails and landings as a priority over creating new trails and landings where feasible, into a designated trail network for ground-based harvesting equipment, consider proper spacing, skid trail direction and location relative to terrain and stream channel features.	USDI BLM 2008, Appendix I – Water, TH 13, p. 289	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036

[50] Soil moisture is the ratio of the weight of the water in the soil to the weight of the solids, expressed as a percentage.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
TH 13	Limit non-specialized skidders or tracked equipment to slopes less than 35 percent, except when using previously constructed trails or accessing isolated ground-based harvest areas requiring short trails over steeper pitches. Also, limit the use of this equipment when surface displacement creates trenches, depressions, excessive removal of organic horizons, or when disturbance would channel water and sediment as overland flow.	USDI BLM 2008, Appendix I – Water, TH 14, p. 289	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 14	Limit the use of specialized ground-based mechanized equipment (those machines specifically designed to operate on slopes greater than 35 percent) to slopes less than 50 percent, except when using previously constructed trails or accessing isolated ground-based harvesting areas requiring short trails over steeper pitches. Also, limit the use of this equipment when surface displacement creates trenches, depressions, excessive removal of organic horizons, or when disturbance would channel water and sediment as overland flow.	USDI BLM 2008, Appendix I – Water, TH 15, p. 289	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 15	Designate skid trails in locations that channel water from the trail surface away from waterbodies, floodplains, and wetlands, or unstable areas adjacent to them.	USDI BLM 2008, Appendix I – Water, TH 16, p. 289.	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 16	Apply erosion control measures to skid trails and other disturbed areas with potential for erosion and subsequent sediment delivery to waterbodies, floodplains, or wetlands. These practices may include seeding, mulching, water barring, tillage, and woody debris placement. Use guidelines from the road decommissioning section.	USDI BLM 2008, Appendix I – Water, TH 18, p. 289	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 17	Construct waterbars on skid trails using guidelines in **Table C-6** where potential for soil erosion or delivery to waterbodies, floodplains, and wetlands exists.	USDI BLM 2008, Appendix I – Water, TH 19, p. 289	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 18	Subsoil skid trails, landings, or temporary roads where needed to achieve no more than 20 percent detrimental soil conditions, and minimize surface runoff, improve soil structure, and water movement through the roadbed. See also R 91–92.	USDI BLM 2008, Appendix I – Water, R 98, p. 285	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 19	Block skid trails to prevent public motorized vehicle and other unauthorized use at the end of seasonal use.	USDI BLM 2008, Appendix I – Water, TH 21, p. 290	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 20	Allow harvesting operations (cutting and transporting logs) when ground is frozen or adequate snow cover exists to prevent soil compaction and displacement.	USDI BLM 2008, Appendix I – Water, TH 12, p. 288	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
TH 21	Minimize the area where more than half of the depth of the organically-enriched upper horizon (topsoil) is removed when conducting forest management operations.	Soil Quality Standards USDA FS 1998	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 22	Maintain at least the minimum percent of effective ground cover needed to control surface erosion, as shown in **Table C-3**, following forest management operations. Ground cover may be provided by vegetation, slash, duff, medium to large gravels, cobbles, or biological crusts.	Soil Quality Standards USDA FS 1998	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
Helicopter			
TH 23	Consider the use of helicopter or aerial logging systems to prevent water quality impacts from road construction or ground-based timber yarding, where other BMPs would be more costly or have limited effectiveness.	USDI BLM 2008, Appendix I – Water, TH 23, p. 290	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
Horse			
TH 24	Within Riparian Reserve, limit horse logging to slopes less than 20 percent.	USDI BLM 2008, Appendix I – Water, TH 24, p. 290	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
TH 25	Construct waterbars on horse skid trails when there is potential for soil erosion and delivery to waterbodies, floodplains, and wetlands.	USDI BLM 2008, Appendix I – Water, TH 25, p. 290	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036

Table C-3. Soil cover based on erosion hazard ratings.

NRCS Erosion Hazard Rating*	Minimum Percent Effective Ground Cover – Year 1	Minimum Percent Effective Ground Cover – Year 2
Very Severe	60%	75%
Severe	45%	60%
Moderate	30%	40%
Slight	20%	30%

* Rating obtained from Natural Resources Conservation Services County Soil Survey information by map unit.

Silvicultural Activities

Table C-4. Best management practices for planting, pre-commercial thinning, and fertilization.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Planting and Pre-commercial Thinning			
S 01	Limit the crossing of stream channels with motorized support vehicles (e.g., OHVs) and mechanized equipment to existing road crossings or temporary ford crossings to the ODFW instream work period, unless a waiver is obtained from permitting agencies.	USDI BLM 2008, Appendix I – Water, S 1, p. 291	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
S 02	Scatter treatment debris on disturbed soils and water bar any equipment access trails that could erode and deposit sediment in waterbodies, floodplains, and wetlands.	USDI BLM 2008, Appendix I – Water, S 4, p. 291	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
Fertilization			
S 03	For streams and waterbodies that support domestic use, apply fertilizer further than 100 feet from the edge of the active channel or shoreline.	USDI BLM 2008, Appendix I – Water, S 5, p. 291	EPA 440/5-86-001,-10 mg/L nitrate nitrogen for domestic water supply. ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
S 04	Locate storage, transfer, and loading sites outside Riparian Reserve and separated from hydrological connections (e.g., road ditches that are linked to stream channels).	USDI BLM 2008, Appendix I – Water, S 6, p. 291	EPA 822-R-13-001 2013,-salmonid acute criterion, 17 mg total ammonia nitrogen/L at pH 7 and temperature of 20 °C. ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033

Fire and Fuels Management

Table C-5. Best management practices for fire and fuels management.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Underburn, Jackpot Burn, and Broadcast Burn			
F 01	Locate fire lines so that open meadows associated with streams do not burn, unless prescribed for restoration.	USDI BLM 2008, Appendix I – Water, F 1, p. 293	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
F 02	Avoid burning of large woody material that is touching the high water mark of a waterbody or that may be affected by high flows.	USDI BLM 2008, Appendix I – Water, F 3, p. 293	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
F 03	Avoid delivery of chemical retardant foam or additives to waterbodies, and wetlands. Store and dispose of ignition devices/ materials (e.g., flares and plastic spheres) outside Riparian Reserve or a minimum of 150 feet from waterbodies, floodplains, and wetlands. Maintain and refuel equipment (e.g., drip torches and chainsaws) a minimum of 100 feet from waterbodies, floodplains, and wetlands. Portable pumps can be refueled on-site within a spill containment system.	USDI BLM 2008, Appendix I – Water, F 4, p. 293	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
F 04	Limit fire lines inside Riparian Reserve. Construct fire lines by hand on all slopes greater than 35 percent and inside the Riparian Reserve inner zone. Use erosion control techniques such as tilling, waterbarring, or debris placement on fire lines when there is potential for soil erosion and delivery to waterbodies, floodplains, and wetlands. Space the waterbars as shown in **Table C-6**. Avoid placement of fire lines where water would be directed into waterbodies, floodplains, wetlands, headwalls, or areas of instability.	USDI BLM 2008, Appendix I – Water, F 5, p. 294	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
F 05	In broadcast burning, consume only the upper horizon organic materials and allow no more than 15 percent of the burned area mineral soil surface to change to a reddish color.	Soil Quality Standards USDA FS 1998	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
Pile and Burn			
F 06	Avoid burning piles within 35 feet of a stream channel.	USDI BLM 2008, Appendix I – Water, F 6, p. 294	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
F 07	Avoid creating piles greater than 16 feet in height or diameter. Pile smaller diameter materials and leave pieces > 12” diameter within the unit. Reduce burn time and smoldering of piles by extinguishment with water and tool use.	Soil Quality Standards USDA FS 1998	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
F 08	When burning machine-constructed piles, preferably locate and consume organic materials on landings or roads. If piles are within harvested units and more than 15 percent of the burned area mineral soil (the portion beneath the pile) surface changes to a reddish color, then consider that amount of area towards the 20 percent detrimental soil disturbance limit.	Soil Quality Standards USDA FS 1998	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Mechanical and Manual Fuels Treatments			
F 09	Do not operate ground-based machinery for fuels reduction within 50 feet of streams (slope distance), except where machinery is on improved roads, designated stream crossings, or where equipment entry into the 50-foot zone would not increase the potential for sediment delivery into the stream. Do not operate ground-based machinery for fuels reduction on slopes > 35 percent. Mechanical equipment with tracks may be used on short pitch slopes of greater than 35 percent but less than 45 percent when necessary to access benches of lower gradient (length determined on a site-specific basis, generally less than 50 feet (slope distance)).	USDI BLM 2008, Appendix I – Water, F 7, p. 294	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
F 10	Use temporary stream crossings if necessary to access the opposite side with any equipment or vehicles (including OHVs). Follow Temporary Stream Crossing practices under Roads section.	USDI BLM 2008, Appendix I – Water, F 8, p. 294	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
F 11	Place residual slash on severely burned areas, where there is potential for sediment delivery into waterbodies, floodplains, and wetlands.	USDI BLM 2008, Appendix I – Water, F 9, p. 294	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
Wildfire Suppression			
F 12	Limit fire lines inside Riparian Reserve. Where hand constructed fire lines are necessary in Riparian Reserve, angle the approach, where feasible, rather than have it perpendicular to the Riparian Reserve. Limit heavy equipment to slopes less than 35 percent. Locate fire lines to minimize directing water into waterbodies, wetlands, headwalls, or areas of instability. Use erosion control techniques such as tilling, waterbarring, or debris placement on fire lines when there is potential for soil erosion and delivery to waterbodies, floodplains, and wetlands. Space waterbars as shown in **Table C-6**. Block dozer lines and roads or landing intersections with an approved barricade or scattered slash to preclude public motorized vehicle use.	USDI BLM 2008, Appendix I – Water, F 5, p. 294, F 11, p. 295	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
F 13	Avoid cutting logs that extend into the stream channel. Fall snags in the Riparian Reserve towards the stream channel when felling is necessary for safety or fire suppression activities.	USDI BLM 2008, Appendix I – Water, F 12, p. 295	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
F 14	Avoid locating incident bases, camps, helibases, staging areas, constructed helispots, and other centers for incident activities in Riparian Reserve or within 200 feet of any waterbody, floodplain, or wetland. Allow water drafting sites for engines and tankers.	USDI BLM 2008, Appendix I – Water, F 13, p. 295	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1)) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
F 15	Locate and maintain portable sanitation facilities at incident bases, camps (including spike/remote camps), helibases, staging areas, constructed helispots, and other centers for incident activities in accordance with State and local regulations.	USDI BLM 2008, Appendix I – Water, F 14, p. 295	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Bacteria OAR 340-041-0009
F 16	Avoid application of chemical retardant, foam, or other chemicals to waterways, maintain a 300 ft. buffer (FA-IM-2008-029), unless the wildfire is deemed a threat to human safety or private property or where use is essential for wildfire control, as determined by the Incident Commander. Apply aerial retardant adjacent to Riparian Reserve by making parallel passes.	USDI BLM 2008, Appendix I – Water, F 15, p. 295	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Emergency Stabilization or Rehabilitation			
F 17	Implement emergency fire stabilization or rehabilitation treatments to accomplish erosion control as quickly as practicable and before the wet season. Soil and water conservation practices may include, but are not restricted to: – Seeding or planting native vegetation for short-term cover development and long-term recovery, unless not available in quantities necessary for the emergency response. – Mulching with straw, wood chips, or other suitable material. To avoid introducing non-native invasive plants, including noxious weeds, when mulching, use certified weed-free straw mulch or rice straw where available. – Placing straw wattles on the contour at adequate spacing between each row to capture eroded material without overflowing. Embed to the surface of the soil in slight trench to prevent undermining. – Placing and anchoring log erosion barriers similarly to straw wattles. – Spreading available cut vegetation or slash on bare soils. – Placing channel sediment retention or stabilization structures. – Placing trash racks for debris above road drainage structures. – Installing drainage structures, such as waterbars or drainage dips, on fire lines, fire roads, and other cleared areas according to guidelines in **Table C-6** (Waterbar spacing by gradient and erosion class). – Repairing damaged road drainage facilities, such as flattened or ripped culvert ends, or burned out plastic pipes, or cleaning ditch lines of materials that impede natural flow. – Blocking or decommissioning roads and trails.	USDI BLM 2008, Appendix I – Water, F 16, p. 296 Interagency Burned Area Emergency Response Guidebook; Interpretation of Department of the Interior 620 DM 3 and USDA Forest Service Manual 2523 For the Emergency Stabilization of Federal and Tribal Trust Lands Version 4.0 February 2006	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Post-Fire Road Repair			
F 18	Implement emergency fire rehabilitation treatments to accomplish erosion control as quickly as practicable and before the wet season. Soil and water conservation practices may include, but are not restricted to: – Reducing road system hydrologic conductivity though proper grading, culvert spacing, and installing drivable dips. – Replacing culverts to increase peak flow capacity of stream crossing culverts to accommodate the 100-year design flood. – Preventing culvert plugging. – Correcting stream diversions.	USDI BLM 2008, Appendix I – Water, F 17, p. 297 Interagency Burned Area Emergency Response Guidebook; Interpretation of Department of the Interior 620 DM 3 (USDI BLM 2006) and USDA Forest Service Manual 2523 For the Emergency Stabilization of Federal and Tribal Trust Lands Version 4.0 (USDA FS *et al.* 2006)	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

Table C-6. Water bar spacing by gradient and erosion class.

Gradient (Percent)	Water Bar Spacing* By Erosion Class†		
	High (Feet)	Moderate (Feet)	Low (Feet)
2–5%	200	300	400
6–10%	150	200	300
11–15%	100	150	200
16–20%	75	100	150
21–35%	50	75	100
36+%	50	50	50

* Spacing is determined by slope distance and is the maximum allowed for the grade.

† The erosion classes include the following rock types:

High: Granite, sandstone, andesite porphyry, glacial or alluvial deposits, soft matrix conglomerate, volcanic ash, and pyroclastics

Moderate: Basalt, andesite, quartzite, hard matrix conglomerate, and rhyolite

Low: Metasediments, metavolcanics, and hard shale

Surface Source Water for Drinking Water

Table C-7. Best management practices for surface source water for drinking water protection.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
SW 01	Plan, locate, design, construct, operate, inspect, and maintain sanitary facilities to minimize water contamination.	USDI BLM 2008, Appendix I – Water, SW 1, p. 299	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 02	Locate contractor camps outside DEQ sensitive zones in drinking water source areas for public water systems. If this is not practicable, require self-contained sanitary facilities.	USDI BLM 2008, Appendix I – Water, SW 2, p. 299 ODEQ Drinking Water Protection Program[51]	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 03	Require self-contained sanitary facilities in surface source water watersheds, when long-term camping (greater than 14 days) is involved with contract implementation.	USDI BLM 2008, Appendix I – Water, SW 3, p. 299	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 04	Provide self-contained sanitary facilities when there is high recreational use (almost continuous occupancy) inside DEQ sensitive zones within drinking water source areas for public water systems, known domestic source water watersheds, or Riparian Reserve inner zone.	USDI BLM 2008, Appendix I – Water, SW 4, p. 299 ODEQ Drinking Water Protection Program[52]	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 05	Locate pack and riding, facilities outside DEQ sensitive zones within drinking water source areas for public water systems, known domestic source water watersheds, or Riparian Reserve inner zone.	USDI BLM 2008, Appendix I – Water, SW 5, p. 299 ODEQ Drinking Water Protection Program[52]	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 06	Do not allow surface occupancy within 200 feet of a known domestic water source or within DEQ sensitive zones in drinking water source areas for public water systems.	USDI BLM 2008, Appendix I – Water, SW 6, p. 299 ODEQ Drinking Water Protection Program[52]	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 07	Do not apply sewage sludge as a soil amendment within drinking water source areas for public water systems, known domestic source water watersheds, or Riparian Reserve.	USDI BLM 2008, Appendix I – Water, SW 7, p. 300 ODEQ Drinking Water Protection Program[52]	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)

[51] http://www.deq.state.or.us/wq/dwp/swcountymap.htm

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
SW 08	Avoid loading, or storing chemical, fuel, or fertilizer in DEQ sensitive zones within drinking water source areas for public water systems, known domestic source water watersheds, or Riparian Reserve inner zone.	USDI BLM 2008, Appendix I – Water, SW 8, p. 300 ODEQ Drinking Water Protection Program[52]	ODEQ–Water Pollution: Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 09	Conduct equipment maintenance outside DEQ sensitive zones within drinking water source areas for public water systems, known domestic source water watersheds, or Riparian Reserve inner zone.	USDI BLM 2008, Appendix I – Water, SW 9, p. 300 ODEQ Drinking Water Protection Program[53]	ODEQ–Water Pollution: Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 10	Use non-oil-based dust suppressants within surface source water watersheds.	USDI BLM 2008, Appendix I – Water, SW 10, p. 300	ODEQ–Water Pollution: Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)
SW 11	Use fire retardant and surfactants as a last resort in fire suppression activities within surface source water watersheds.	USDI BLM 2008, Appendix I – Water, SW 11, p. 300	ODEQ–Water Pollution: Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)

[52] http://www.deq.state.or.us/wq/dwp/swcountymap.htm

Recreation

Table C-8. Best management practices for recreation management.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
All Recreation Facilities			
REC 01	Implement erosion control measures at recreation sites to stabilize exposed soils where water flows or sediment may reach waterbodies.	USDI BLM 2008, Appendix I – Water, REC 1, p. 301	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 02	Minimize development of recreation facilities that are not water-dependent (e.g., boat ramps and docks) in the Riparian Reserve.	USDI BLM 2008, Appendix I – Water, REC 2, p. 301	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Bacteria OAR 340-041-0009 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
Developed Recreation Sites			
REC 03	Use self-contained sanitary facilities at all developed recreational facilities, unless a sewage system and drain field is approved by ODEQ.	USDI BLM 2008, Appendix I – Water, REC 3, p. 301	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Bacteria OAR 340-041-0009
REC 04	When conducting recreation site maintenance, do not cut portions of logs or down woody material that fall across the active stream channel. Keep adequate lengths of material on the banks to anchor it in place. If not practicable to make the log stable, it may be removed.	USDI BLM 2008, Appendix I – Water, REC 5, p. 301	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
Water Dependent Facilities			
REC 05	Construct boat ramps and approaches with hardened surfaces. Minimize riprap to a 4-foot width to protect concrete ramps. Docks must not be wider than 6 feet, and not include any treated wood.	USDI BLM 2008, Appendix I – Water, REC 6, p. 301	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
Off-highway Vehicle (OHV) Trails			
REC 06	Locate new OHV trails on stable locations (e.g., ridge tops, benches, and gentle-to-moderate side slopes). Minimize trail construction on steep slopes where runoff could channel to a waterbody.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 07	Design, construct, and maintain trail width, grades, curves, and switchbacks suitable to the terrain and designated use. Use and maintain surfacing materials suitable to the site and use, to withstand traffic and to minimize runoff and erosion.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 08	Suspend construction or maintenance of trails where erosion and runoff into waterbodies would occur.	USDI BLM 2008, Appendix I – Water, REC 11, p. 302	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 09	Locate staging areas outside Riparian Reserve. Design or upgrade staging areas to prevent sediment/pollutant delivery to wetlands, floodplains, and waterbodies, (e.g., rocking or hardening and drainage through grading or shaping).	USDI BLM 2008, Appendix I – Water, REC 12, p. 302	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
REC 10	Designate class of vehicle suitable for the trail location, width, trail surfaces, and waterbody crossings, to prevent erosion and potential sediment delivery.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
REC 11	Designate season of use if the trail bed is prone to erosion, rutting, gullying, or compaction, due to high soil moisture, standing water or snowmelt.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
REC 12	Use existing road crossings of streams and floodplains on low-volume roads and partially decommissioned roads that tie with the trail system, where safety permits.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Toxic Substances OAR 340-041-0033
REC 13	Minimize low-water stream crossings for constructed or existing trails. Cross streams on stable substrate (e.g., bedrock, cobble) in areas of low streambanks. Block alternate stream-crossing routes where OHV wheel slippage (acceleration/ braking) would tear down banks or deliver sediment.	USDI BLM 2008, Appendix I – Water, REC 7, p. 301	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Toxic Substances OAR 340-041-0033
REC 14	Avoid public motorized vehicle use in ponds and wetlands, and navigating up or down streams and side-channels. Use suitable barriers where feasible.	USDI BLM 2008, Appendix I – Water, REC 7, pp. 302–303	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Toxic Substances OAR 340-041-0033
REC 15	Design improved stream crossings (culverts and bridges) for the 100-year flood event. In streams containing native migratory fish, install culverts consistent with ODFW fish passage criteria (OAR 635-412-0035 (3)). In streams with ESA listed fish, stream crossings must also meet ARBO II (USDC NMFS 2013 and USDI FWS 2013) fish passage criteria and state fish passage criteria. (See Roads and Landings section for stream crossing BMPs).	USDI BLM 2008, Appendix I – Water, REC 10, p. 302	OAR 635-412-0035–ODFW, Fish Passage Criteria ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Toxic Substances OAR 340-041-0033
REC 16	In OHV bridge structures, avoid chemically treated materials at water level contact points where leachate or solids may enter waterbodies.	USDI BLM 2008, Appendix I – Water, REC 15, p. 302	ODEQ–Water Pollution: Toxic Substances OAR 340-041-0033 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (10) Toxic Substances OAR 340-041-0033
REC 17	Use a temporary flow diversion bypass to minimize downstream turbidity, when constructing in perennial stream crossings (See Roads and Landings section for Stream Crossing BMPs).	USDI BLM 2008, Appendix I – Water, REC 16, p. 302	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
REC 18	When constructing or maintaining trails within Riparian Reserve, do not cut the portion of logs or down woody material that extend into the active stream channel. Provide for adequate stabilization of the logs if not doing so would create a safety hazard.	USDI BLM 2008, Appendix I – Water, REC 8, p. 302	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
REC 19	Harden trail approaches to stream crossings using materials such as geotextile fabric and rock aggregate.	USDI BLM 2008, Appendix I – Water, REC 13, p. 302	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 20	Hydrologically disconnect trails from waterbodies to the extent practicable. Install drainage features (e.g., drain dips and lead-off ditches), on approaches to stream crossings as needed to divert runoff and reinforce with rock for longevity.	USDI BLM 2008, Appendix I – Water, REC 14, p. 302. USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 21	Where trails intersect road ditches, provide erosion resistant crossings. Divert water from the trail to keep from reaching wetlands, floodplains, and waterbodies.	USDI BLM 2008, Appendix I – Water, REC 18, p. 303	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 22	If trail width is too wide for the designated use (such as old roads converted to trails), consider tilling one side of the trail, covering with brush, and seeding or planting.	USDI BLM 2008, Appendix I – Water, REC 19, p. 303	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 23	Repair rills and gullies to keep sediment from reaching wetlands, floodplains, and waterbodies.	USDI BLM 2008, Appendix I – Water, REC 20, p. 303	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 24	Construct and repair water bars, drain dips, and lead-off ditches as needed. These features may need rock reinforcement to promote longevity. Self-maintaining drain dips or lead-off features are the preferred design.	USDI BLM 2008, Appendix I – Water, REC 21, p. 303	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 25	Monitor trail condition to identify surface maintenance and drainage needs to prevent or minimize sediment delivery to waterbodies.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 26	Close and rehabilitate unauthorized trails, where needed, to protect sensitive areas and water quality.	USDA FS 2012, pp. 91–92	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Toxic Substances OAR 340-041-0033
Trails (Hiking)			
REC 27	When constructing or maintaining trails within Riparian Reserve, do not cut any portion of logs or down woody material that extend into the active stream channel. Use alternative passage options, such as earthen ramps, small notch steps, or slight trail realignments, to facilitate maintenance of intact logs. Cut and stabilize if necessary for safe passage and safety.	USDI BLM 2008, Appendix I – Water, REC 23, p. 303	ODEQ–Water Pollution: Antidegradation OAR 340-041-004(1) Biocriteria OAR 340-041-0011 Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
Trail Closure			
REC 28	Remove existing stream crossings or bridges (See Road Decommissioning BMPs).	USDI BLM 2008, Appendix I – Water, REC 24, p. 303	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (8) Turbidity OAR 340-041-0036

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
REC 29	Position fill or waste material in a location that would avoid direct or indirect sediment discharge to streams or wetlands.	USDI BLM 2008, Appendix I – Water, REC 25, p. 304	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 30	Plant restored stream banks with native vegetation, using water-tolerant species where appropriate, then mulch.	USDI BLM 2008, Appendix I – Water, REC 26, p. 304	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
REC 31	Barricade and allow nearby vegetation to grow into closed trails.	USDI BLM 2008, Appendix I – Water, REC 27, p. 304	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
Dispersed Recreation			
REC 32	Site camps for permitted group overnight camping greater than 150 feet from surface water.	USDI BLM 2008, Appendix I – Water, REC 28, p. 304	ODEQ–Water Pollution: Bacteria OAR 340-041-0009 Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (13)

Salable Mineral Material Disposal

Table C-9. Best management practices for salable mineral material disposal.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Salable Minerals			
M 01	Locate stockpile sites on stable ground where the material would not move into waterbodies, floodplains, and wetlands.	USDI BLM 2008, Appendix I – Water, M 18, p. 309	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
M 02	Locate, design, and construct salable mineral sites to control runoff and prevent or minimize sediment delivery to streams. Prevent overburden, solid wastes, drainage water or petroleum products from entering wetlands, Riparian Reserve, flood plains, and waters of the State.	USDI BLM 2008, Appendix I – Water, M 18, p. 309 OAR 629-625-0500 1-5	OAR 629-625-0500-ODF, Rock Pits and Quarries ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
M 03	Locate, design, and maintain settling ponds to contain sediment discharges.	USDI BLM 2008, Appendix I – Water, M 1, p. 309	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
M 04	When a quarry or rock pit is depleted or vacated, stabilize cutbanks, headwalls, and other surfaces to prevent surface erosion and landslides. Close roads, excavations, and crusher pads in accordance with Roads and Landings section. Remove all potential pollutants to prevent their entry into wetlands, Riparian Reserve, floodplains, and waters of the State.	OAR 629-625-0500 ODEQ 2005 NS - 6	OAR 629-625-0500-ODF, Rock Pits and Quarries ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036
M 05	Use erosion-reduction practices, such as seeding, mulching, silt fences, and woody debris placement, to limit erosion and transport of sediment to streams from quarries. Provide drainage from stockpiles and mineral sites, dispersed over stable vegetated areas rather than directly into stream channels. Grade all material sites, where practicable to conform with the surrounding topography prior to closure. Utilized topsoil as a medium for successful revegetation. Reseed and plant trees, where needed.	USDI BLM 2008, Appendix I – Water, M 22, p. 309	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Turbidity OAR 340-041-0036

Spill Prevention and Abatement

Table C-10. Best management practices for spill prevention and abatement.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
Operations Near Waterbodies			
SP 01	Take precautions to prevent leaks or spills of petroleum products (e.g., fuel, motor oil, and hydraulic fluid) from entering the waters of the State.	40 CFR 112 OAR 629-620-0100(2)	[40 CFR 112] – Oil Pollution Prevention. Reportable quantity is a visible sheen where waterways are involved. OAR 629-620-0100-ODF, Chemical and Other Petroleum Product Rules ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) and (13) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
SP 02	Take immediate action to stop and contain leaks or spills of chemicals and other petroleum products. Notify the Oregon Emergency Response System, through the District Hazard Materials specialist, of any spill that enters the waters of the State.	40 CFR 112 OAR 629-620-0100(3), (4)	[40 CFR 112] – Oil Pollution Prevention. Reportable quantity is a visible sheen where waterways are involved. OAR 629-620-0100-ODF, Chemical and Other Petroleum Product Rules ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) and (13) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
SP 03	Inspect and clean heavy equipment as necessary prior to moving on to the project site, in order to remove oil and grease, non-native invasive plants, including noxious weeds, and excessive soil. Inspect hydraulic fluid and fuel lines on heavy-mechanized equipment for proper working condition. Where practicable, maintain and refuel heavy equipment a minimum of 150 feet away from streams and other waterbodies. Refuel small equipment (e.g. chainsaws and water pumps) at least 100 feet from waterbodies (or as far as practicable from the waterbody where local site conditions do not allow a 100-foot setback) to prevent direct delivery of contaminants into a waterbody. Refuel small equipment from no more than 5-gallon containers. Use absorbent material or a containment system to prevent spills when re-fueling small equipment within the stream margins or near the edge of waterbodies. In the event of a spill or release, take all reasonable and safe actions to contain the material. Specific actions are dependent on the nature of the material spilled. Use spill containment booms or as required by ODEQ. Have access to booms and other absorbent containment materials. Immediately remove waste or spilled hazardous materials (including but not limited to diesel, oil, hydraulic fluid) and contaminated soils near any stream or other waterbody, and dispose of it/them in accordance with the applicable regulatory standard. Notify Oregon Emergency Response System of any spill over the material reportable quantities, and any spill not totally cleaned up after 24 hours. Store equipment containing reportable quantities of toxic fluids outside of Riparian Reserve.	USDI BLM 2008, Appendix I – Water, SP 1, p. 311	40 CFR 112 – Oil Pollution Prevention. Reportable quantity is 42 U.S. gallons not involving waterways, a visible sheen where waterways are involved. ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) and (13) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
SP 04	If more than 42 gallons of fuel or combined quantity of petroleum product and chemical substances would be transported to a project site as project materials, implement the following precautions: 1. Plan a safe route and material transfer sites so that all spilled material will be contained easily at that designated location. 2. Plan an active dispatch system that can relay information to appropriate resources. 3. Ensure a spill containment kit that can absorb and contain 55 gallons of petroleum product and chemical substances is readily available. 4. Provide for immediate notification to OERS in the event of a spill. Have a radio-equipped vehicle lead the chemical or fuel truck to the project site. 5. Assemble a spill notification list that includes the district hazardous materials coordinator, ODEQ, and spill clean-up contractors. 6. Construct a downstream water user contact list with addresses and phone numbers. 7. When operating within source water watersheds, pre-estimate water flow travel times through the watershed to predict downstream arrival times. 8. Be prepared to sample water and carry sample containers. 9. Be prepared to assist OSP and ODFW to assess wildlife impacts of any material spilled.	USDI BLM 2008, Appendix I – Water, SP 2, p. 312	40 CFR 112 – Oil Pollution Prevention. Reportable quantity is 42 U.S. gallons not involving waterways, a visible sheen where waterways are involved. ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) and (13) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
Spill Abatement			
SP 05	Spill Prevention, Control, and Countermeasure Plan (SPCC): All operators shall develop a modified SPCC plan prior to initiating project work if there is a potential risk of chemical or petroleum spills near waterbodies. The SPCC plan will include the appropriate containers and design of the material transfer locations. No interim fuel depot or storage location other than a manned transport vehicle would be used.	USDI BLM 2008, Appendix I – Water, SP 3, p. 312	40 CFR 112 – Oil Pollution Prevention. Reportable quantity is 42 U.S. gallons not involving waterways, a visible sheen where waterways are involved. OAR-340-142-0030-DEQ, Oil and Hazardous Materials Emergency Response Requirements
SP 06	Spill Containment Kit (SCK): All operators shall have a SCK as described in the SPCC plan on-site during any operation with potential for run-off to adjacent waterbodies. The SCK will be appropriate in size and type for the oil or hazardous material carried by the operator.	USDI BLM 2008, Appendix I – Water, SP 4, p. 313	OAR-340-142-0030-DEQ, Oil and Hazardous Materials Emergency Response Requirements

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
SP 07	Operators shall be responsible for the clean-up, removal, and proper disposal of contaminated materials from the site.	USDI BLM 2008, Appendix I – Water, SP 5, p. 313	OAR-340-102-DEQ, Standards Applicable to Generators of Hazardous Waste OAR-340-122-DEQ, Hazardous Substance Remedial Action Rules

Instream Restoration Activities

Table C-11. Best management practices for instream restoration activities.

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
RST 01	Confine work in the stream channels to the ODFW instream work period unless a waiver is obtained from permitting agencies.	USDI BLM 2008, Appendix I – Water, RST 1, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
RST 02	Do not drive heavy equipment in flowing channels and floodplains in stream channels that are sensitive to disturbance (e.g., meadow streams).	USDI BLM 2008, Appendix I – Water, RST 2, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
RST 03	In well-armored channels that are resistant to damage (e.g., bedrock, small boulder, and cobble-dominated), consider conducting the majority of heavy-equipment work from within the channel, during low streamflow, to minimize damage to sensitive riparian areas.	USDI BLM 2008, Appendix I – Water, RST 3, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
RST 04	Design access routes for individual work sites to reduce exposure of bare soil and extensive stream bank shaping.	USDI BLM 2008, Appendix I – Water, RST 4, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
RST 05	Limit the number and length of equipment access points through Riparian Reserve.	USDI BLM 2008, Appendix I – Water, RST 5, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
RST 06	Limit the amount of stream bank excavation to the minimum necessary to ensure stability of enhancement structures. Provide isolation from flowing water during excavation. Place excavated material above the flood-prone area and cover or place a berm to avoid its reentry into the stream during high-flow events.	USDI BLM 2008, Appendix I – Water, RST 6, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036 Temperature OAR 340-041-0028
RST 07	Inspect all mechanized equipment daily for leaks and clean as necessary to ensure that toxic materials, such as fuel and hydraulic fluid, do not enter the stream.	USDI BLM 2008, Appendix I – Water, RST 7, p. 314	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033

BMP Number	Best Management Practices	Source	Water Quality Standards and Regulations
RST 08	Locate equipment storage areas at least 100 feet from any water feature, including machinery used in stream channels for more than one day.	USDI BLM 2008, Appendix I – Water, RST 8, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
RST 09	When using heavy equipment in or adjacent to stream channels during restoration activities, develop and implement an approved spill containment plan that includes having a spill containment kit on-site and at previously identified containment locations.	USDI BLM 2008, Appendix I – Water, RST 9, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
RST 10	Refuel equipment, including chainsaws and other hand power tools, at least 100 feet from waterbodies (or as far as practicable from the waterbody where local site conditions do not allow a 100-foot setback) to prevent direct delivery of contaminants into a waterbody.	USDI BLM 2008, Appendix I – Water, RST 10, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (12) Biocriteria OAR 340-041-0011 Toxic Substances OAR 340-041-0033
RST 11	Use waterbars, barricades, seeding, and mulching to stabilize bare soil areas along project access routes prior to the wet season.	USDI BLM 2008, Appendix I – Water, RST 11, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
RST 12	Prior to the wet season, stabilize disturbed areas where soil will support seed growth, with the potential for sediment delivery to wetlands, and waters of the State. Apply native seed and certified weed-free mulch or erosion control matting in steep or highly erosive areas. If needed to promote a rapid ground cover and prevent aggressive invasive plants, use interim erosion control non-native sterile annuals before attempting to restore native seed or plants.	USDI BLM 2008, Appendix I – Water, RST 12, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
RST 13	When replacing culverts, design placement location, crossing type, and installation depth to avoid excessive scour through the site, consider using larger culverts and embedding the culvert to 30 percent bedload. Use bridges on high-gradient stream channels.	USDI BLM 2008, Appendix I – Water, RST 13, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036
RST 14	Rehabilitate headcuts and gullies. Use large wood in preference to rock weirs.	USDI BLM 2008, Appendix I – Water, RST 14, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1), (7) Turbidity OAR 340-041-0036
RST 15	Implement measures to control turbidity. Measures may include installation of turbidity control structures (e.g., isolation, diversion, and silt curtains) immediately downstream of in-stream restoration work areas. Remove these structures following completion of turbidity-generating activities.	USDI BLM 2008, Appendix I – Water, RST 15, p. 315	ODEQ–Water Pollution: Antidegradation OAR 340-041-0004(1) Statewide Narrative OAR 340-041-0007(1) Biocriteria OAR 340-041-0011 Turbidity OAR 340-041-0036

References

Gesford, A. L., and J. A. Anderson. 2006. Environmentally sensitive maintenance for dirt and gravel roads. Pennsylvania Department of Transportation. http://water.epa.gov/polwaste/nps/upload/EnvironmentallySensitiveMaintenance_DirtGravelRoads.pdf.

Johansen, K., R. Copstead, and J. Moll. 1997. Relief culverts. Water/road interaction technology series. Research Report 9777 1812-SDTDC. USDA FS, San Dimas Technology and Development Program, Washington, D.C. 7 pp. http://www.stream.fs.fed.us/water-road/.

ODEQ. 2015. Oregon Administrative rules. Water Pollution, Division 41. Water quality standards, beneficial uses, policies and criteria for Oregon. http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_041.html.

ODEQ and USDI BLM. 2011. Memorandum of understanding between United States Dept. of the Interior, Bureau of Land Management, and State of Oregon Dept. of Environmental Quality to meet State and Federal water quality rules and regulations. Agreement Number BLM-OR932-1013 and DEQ Agreement # 040-11/I, Subject Function Code 1786, 7240 (P), April 2011. 12 pp. http://www.deq.state.or.us/wq/pubs/igas/DEQBLMMOU20110401.pdf.

---. 2005. Erosion and sediment control manual. Prepared by: Geosyntec Consultants, San Diego, CA. Project Number SW0106-01.

ODFW. 2008. Oregon guidelines for timing of in-water work to protect fish and wildlife resources. 12 pp. http://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_%20InWater_Work2008.pdf.

USACOE. 1972. Clean Water Act, Section 404. http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/materials/cwa_sec404doc.pdf.

USDA FS. 1998. U.S. Forest Service Manual 2500, Chap. 2520 Watershed Protection and Management, R-6 Supplement 2520.98-1. 6 pp.

---. 2002. Management and techniques for riparian restorations: roads field guide. Vol. I and II. Gen. Tech. Rep. RMRS-GTR-102 vol. I and II. USDA FS, Rocky Mountain Research Station. Fort Collins, CO. 38 pp. http://www.fs.fed.us/rm/pubs/rmrs_gtr102.html.

---. 2012. National best management practices for water quality management on National Forest system lands. Volume 1: National core BMP technical guide. FS-990a. http://www.fs.fed.us/biology/resources/pubs/watershed/FS_National_Core_BMPs_April2012.pdf.

USDA FS, USDI BIA, USDI BLM, USDI NPS, and USDI FWS. 2006. Interagency Burned Area Emergency Response Guidebook. Interpretation of Department of the Interior 620 DM 3 and USDA Forest Service Manual 2523. For the Emergency Stabilization of Federal and Tribal Trust Lands Version 4.0. http://www.fws.gov/fire/ifcc/esr/Policy/es_handbook_2-7-06.pdf.

USDC NMFS. 2013. Endangered Species Act - Section 7 Programmatic consultation conference and biological opinion and Magnuson-Stevens Fishery Conservation and Management Act essential fish habitat response for reinitiation of aquatic restoration activities in states of Oregon and Washington (ARBO II). NMFS consultation number NWR-2013-9664. http://www.blm.gov/or/districts/medford/plans/files/nmfs-arboii.pdf.

USDI BLM. 2006. Interagency burn area rehabilitation guidebook. Interpretation of Department of the Interior 620 DM 3. For the burned area rehabilitation of federal and tribal trust lands. Version 1.3. Washington, D.C. 36 pp.

---. 2008. Final Environmental Impact Statement for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management Districts. Vol. I–IV. Portland, OR. http://www.blm.gov/or/plans/wopr/final_eis/index.php.

---. 2010. Vegetation treatments using herbicides on BLM lands in Oregon. Record of Decision. http://www.blm.gov/or/plans/vegtreatmentseis/files/Veg_Treatments_ROD_Oct2010.pdf.

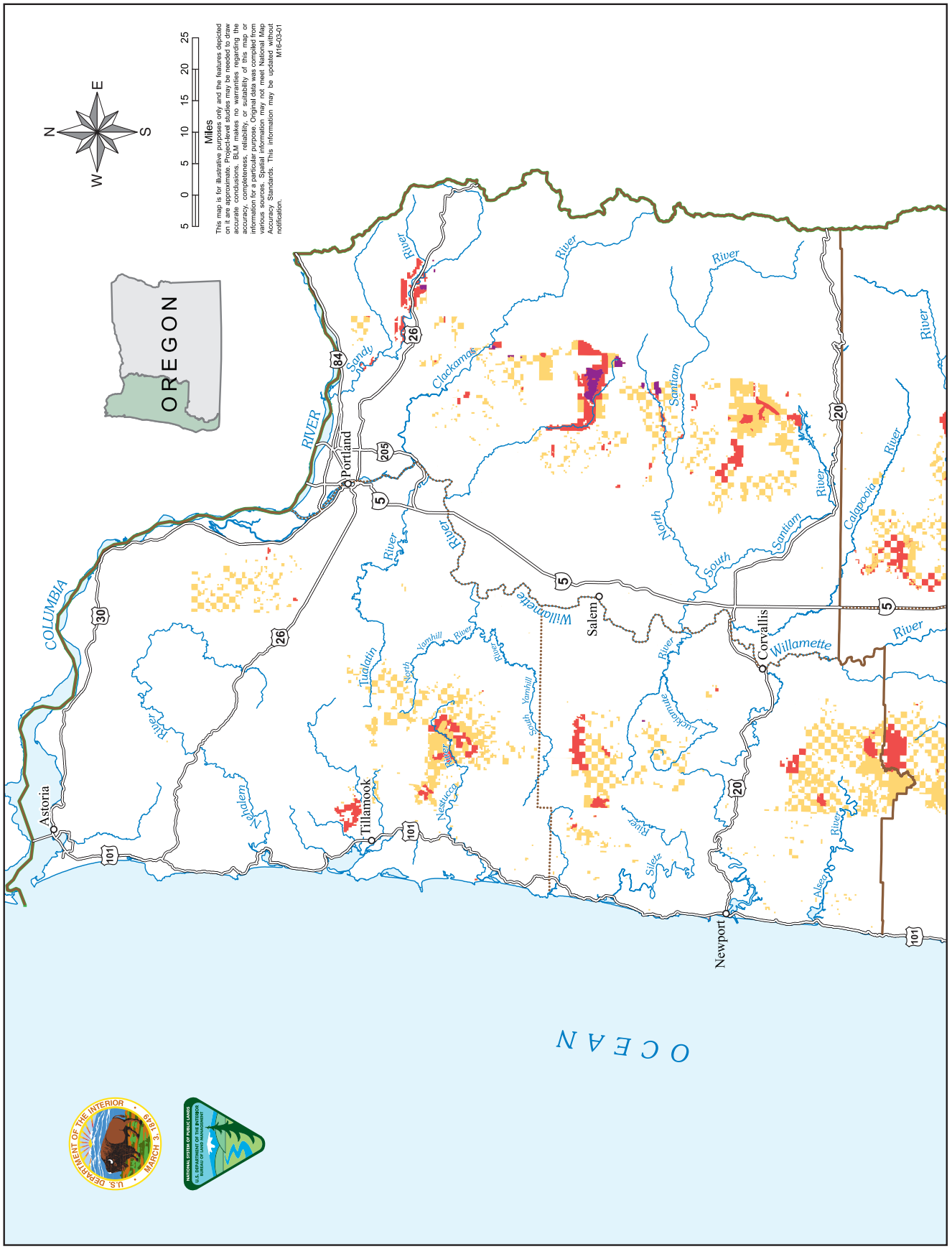
---. 2011. BLM Road Design Handbook H9113-1. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.5566.File.dat/H-9113-1.pdf.

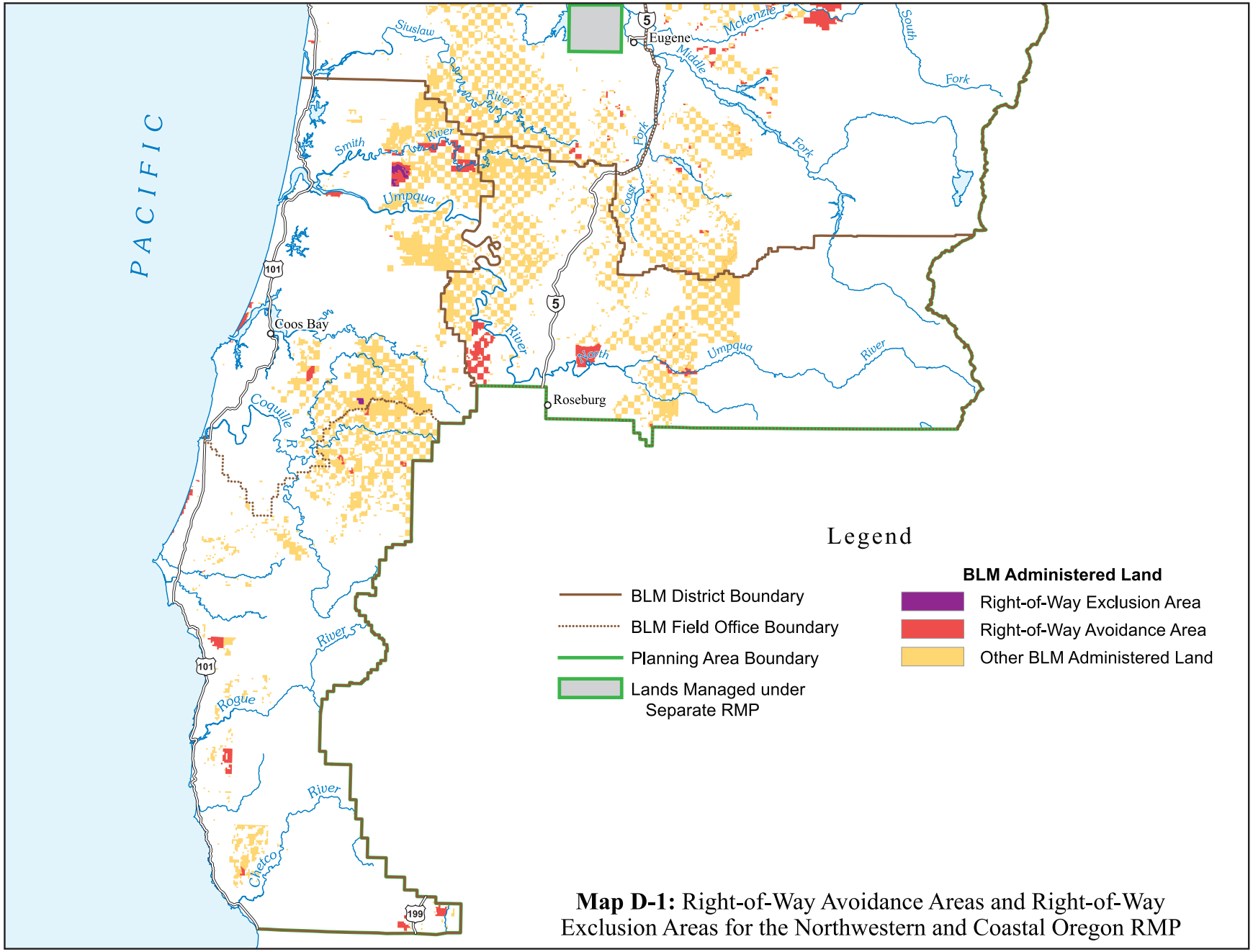
U.S. Environmental Protection Agency (EPA). 2005. National management measures to control nonpoint source pollution from forestry. Nonpoint Source Control Branch, Office of Wetlands, Oceans, and Watersheds, Office of Water, U.S. Environmental Protection Agency. EPA-841-B-05-001. http://www2.epa.gov/polluted-runoff-nonpoint-source-pollution/national-management-measures-control-nonpoint-source.

Appendix D – Lands and Realty

This appendix provides a map of right-of-way avoidance areas (**Map D-1**) and the following detailed data about lands and realty:

- Land Tenure Adjustment Criteria
- Land Withdrawals
- Land Tenure Zone 3 Lands
- Inventory of Communication Sites


N
W
E
S
5 0 5 10 15 20 25
Miles
This map is for illustrative purposes only and the features depicted on it are approximate. Project-level studies may be needed to draw accurate conclusions. BLM makes no warranties regarding the accuracy, completeness, reliability, or suitability of this map or information for a particular purpose. Cropland data compiled from various sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
M16-03-01
OREGON
COLUMBIA
RIVER
Portland
Astoria
Tillamook
Salem
Corvallis
Newport
Sandy
Clackamas
Santiam
North Santiam
South Santiam
Willamette
Calapooia
Yamhill
Nestucca
Siletz
Alsea
Luckiamute
Tualatin
Wilson
Trask
Nehalem
OCEAN
84
26
205
5
30
20
101



Map D-1: Right-of-Way Avoidance Areas and Right-of-Way Exclusion Areas for the Northwestern and Coastal Oregon RMP

Land Tenure Adjustment Criteria

In accordance with the FLPMA and other laws, Executive Orders, and Departmental and BLM policy, the BLM will consider the following factors in evaluating opportunities for disposal or acquisition of lands or interests in lands. The lists are not all-inclusive, but represent the major factors that the BLM will consider.

General Land Tenure Adjustment Evaluation Factors

The BLM will use the following criteria to evaluate all land tenure adjustments:

- Improves manageability of specific areas
- Maintains or enhances important public resource values and uses
- Consolidates Federal mineral estate or reuniting split surface and mineral estates
- Facilitates development of energy and mineral potential
- Reduces difficulty or cost of public land administration
- Provides accessibility to Federal land for public recreation and other uses
- Amount of public investments in facilities or improvements and the potential for recovering those investments
- Suitability of land for management by another Federal agency
- Significance of decision in stabilizing or enhancing business, social, and economic conditions, or lifestyles
- Meets long-term public management goals as opposed to short term
- Facilitates National, State, and local BLM priorities
- Consistency with cooperative agreements and plans or policies of other agencies
- Facilitates implementation of other aspects of the approved resource management plans

Acquisition Criteria

The BLM will use the following criteria to identify parcels for acquisition:

- Facilitates access to public land and resources retained for long-term public use
- Secures Threatened or Endangered or Bureau Sensitive plant and animal species habitat
- Protects riparian areas and wetlands
- Contributes to biodiversity
- Protects high-quality scenery
- Enhances the opportunity for new or emerging public land uses or public resource values
- Facilitates management practices, uses, scales of operation, or degrees of management intensity that are viable under economic program efficiency standards
- Protects significant cultural resources and sites eligible for inclusion on the National Register of Historic Places where non-Federal sites exist for the proposed use

Disposal Criteria

The BLM will use the following criteria to identify the disposal of parcels in Land Tenure Zone 2 as part of an exchange, or the disposal of parcels in Land Tenure Zone 3:

- Suitability for purposes including but not limited to community expansion or economic development, such as industrial, residential, or agricultural development
- Lands of limited public resource value
- Lands that are difficult for the BLM to manage and unsuitable for transfer to other Federal agencies or State and local governments
- Lands that aid in aggregating or repositioning other public lands or public land resource values where the public values to be acquired outweigh the values to be exchanged

O&C Land Exchange Criteria

An O&C land exchange is an exchange within the O&C area as delineated in Public Law 105-321. The BLM will consider the following forest management and related factors when evaluating the feasibility of an O&C land exchange:

- Land exchanges that maintain the existing balance between the various land use allocations will be considered favorably
- Land exchanges that enhance public resource values or improve land patterns and management capabilities of both non-Federal and BLM-administered lands within the planning area by consolidating ownership and reducing the potential for land use conflict
- Offered lands that are primarily suitable for agriculture, business, and home sites, or lands that require extensive post-acquisition management will not be favorably considered. The O&C lands designated for timber production will generally not be exchanged for lands, which will be managed solely for a single use, such as species protection.
- Generally, where cutting rights are reserved on existing and future timber stands by the proponent, the proposed exchange will not be considered favorably.

The exchange of O&C and CBWR lands specifically for lands located outside of the 18 O&C counties is prohibited by regulations in 43 CFR 2200. This restriction applies to timber and other interests in lands as well.

Land Withdrawals

Table D-1 through **Table D-5** contains detailed information about existing and proposed land withdrawals.

Table D-1. Withdrawal tables legend.

Authority/Order Type:		**Segregation Effect:**	
DO	Director Order	A	Withdrawn from operation of the general land laws, the mining laws, and the Mineral Leasing Act
EO	Executive Order	B	Withdrawn from operation of the general land and mining laws
SO	Secretarial Order	C	Withdrawn from operation of the general land laws
BO	Bureau Order	D	Withdrawn from operation of the general land laws; Open to mining subject to Public Law 359
PL	Public Law	E	Withdrawn from operation of the general land laws; Withdrawn from mining except metalliferous
PLO	Public Land Order	F	Withdrawn from operation of the general agricultural and mining laws
PSR	Power Site Reserve		
PSC	Power Site Classification	**Recommendation:**	
R&PP	Recreation and Public Purpose	C	Continue
WPD	Water Power Designation	R	Revoke
FPC	Federal Power Commission	E	Expire
FO	Federal Energy Regulatory Commission Order		

Notes:
Location description indicates sections within which withdrawn lands are located. Information on which portions of the cited sections are withdrawn is available within the District Office.
Table does not include lands that have been completely transferred out of Federal ownership subsequent to withdrawal or lands within U.S. Forest Service National Forest boundaries.

Note: Acres are based on the most available information, but may have discrepancies because of the general nature of some of the information.

Table D-2. Withdrawals in the Coos Bay District.

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 50856	PLO 7215	T. 19 S., R. 12 W., Sec. 1	40.43	Pacific Coastline, Highway 101	BLM	F	C
		T. 26 S., R. 14 W., Sec. 28	40	Pacific Coastline, Highway 101	BLM	F	C
		T. 27 S., R. 14 W., Sec. 29	2.26	Pacific Coastline, Highway 101	BLM	F	Revoke patented parcel
		T. 30 S., R. 15 W., Sec. 12	40	Pacific Coastline, Highway 101	BLM	F	C
		T. 32 S., R. 15 W., Sec. 4	71.75	Pacific Coastline, Highway 101	BLM	F	C
		T. 33 S., R. 14 W., Sec. 31	155.16	Pacific Coastline, Highway 101	BLM	F	C
		T. 34 S., R. 14 W., Sec. 6	40.7	Pacific Coastline, Highway 101	BLM	F	C
		T. 34 S., R. 14 W., Sec.33	162.05	Pacific Coastline, Highway 101	BLM	F	C
		T. 34 S., R. 14 W., Sec. 34	40	Pacific Coastline, Highway 101	BLM	F	C
		T. 34 S., R. 15 W., Sec. 1	7.92	Pacific Coastline, Highway 101	BLM	F	C
		T. 38 S., R. 14 W., Sec. 4	40	Pacific Coastline, Highway 101	BLM	F	C
		T. 38 S., R. 14 W., Sec. 5	40	Pacific Coastline, Highway 101	BLM	F	C
		T. 38 S., R. 14 W., Sec. 34	34	Pacific Coastline, Highway 101	BLM	F	C
		T. 39 S., R. 14 W., Sec. 23	40	Pacific Coastline, Highway 101	BLM	F	C
		T. 41 S., R. 13 W., Sec. 6	2.56	Pacific Coastline, Highway 101	BLM	F	C
		T. 41 S., R. 13 W., Sec. 7	0.32	Pacific Coastline, Highway 101	BLM	F	C
		Total Acres for OR 50856:	**757.15**				
ORE 016183C	PLO 3869	T. 20 S., R. 9 W., Sec. 31	81.29	Smith River Falls Recreation Site	BLM	B	C - Developed Sites
		T. 20 S., R. 9 W., Sec. 33	3.5	Vincent Creek Recreation Site	BLM	B	C
		T. 23 S., R. 10 W., Sec. 2	78.86	Loon Lake Recreation Site	BLM	B	C
		T. 27 S., R. 10 W., Sec. 4	60	Park Creek Recreation Site	BLM	B	C
		T. 27 S., R. 10 W., Sec. 18	20	Big Tree Recreation Site	BLM	B	R
		T. 30 S., R. 9 W., Sec. 9	80	Bear Creek Recreation Site	BLM	B	R
		T. 32 S., R. 14 W., Sec. 12	120	Sixes River Recreation Site	BLM	B	C
		Total Acres for ORE 016183C:	**443.65**				
OR 23558	SO 12/31/1930	T. 23 S., R. 10 W., Sec. 1	51.51	Rec Wdl. No. 43 East Shore Recreation Site	BLM	B	C - Developed Site
OR 19291A	PLO 3530	T. 27 S., R. 10 W., Secs. 17–20	590	Cherry Creek Natural Area	BLM	B	C - Protecting site, for research opportunities
OR 6398	PL 181	T. 27 S., R. 11 W., Sec. 35	120	LaVerne County Park	BLM/Coos Co.	B	C - Developed County Park
		T. 27 S., R. 12 W., Sec. 35	160	Rock Prairie County Park	BLM/Coos Co.	B	C - Potential for County Park Development
		T. 28 S., R. 9 W., Sec. 7	87.72	Judge Hamilton County Park	BLM/Coos Co.	B	C - Potential for County Park Development
		T. 28 S., R. 11 W., Sec. 5	80	Middle Creek County Park	BLM/Coos Co.	B	C - Potential for County Park Development

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 28 S., R. 11 W., Sec. 11	80	Frona County Park	BLM/Coos Co.	B	C - Developed County Park
		Total Acres for OR 6398:	**527.72**				
OR 21318	SO 6/12/1907	T. 40 S., R. 13 W., Secs. 11, 14	320.75	Potential National Park	BLM	B	R - Not developed; No planned development; No public support for establishment of park or monument.
OR 19231	EO 11/24/1903	T. 22 S., R. 13 W., Sec. 14	71.1	Umpqua Jetty Maintenance	COE	B	R - COE indicated a desire to relinquish
OR 21901	EO 8/23/1895	T. 22 S., R. 13 W., Sec. 13	130	Umpqua River Light Station	USCG	B	R - USCG indicated a desire to relinquish
OR 4011	EO 7/14/1884	T. 26 S., R. 14 W., Secs. 2, 3	5.1	Bar Watch Administrative Site	USCG	B	C
OR 19227	EO 7/14/1884	T. 26 S., R. 14 W., Sec. 2	2.43	Military Facility	US Navy	B	C
OR 22094	EO 6/14/1876	T. 26 S., R. 14 W., Sec. 4	21.58	Sub surface only/Cape Arago Lighthouse	USCG		R
ORE 012693	PLO 5490	All Public Domain lands	50,329	Multiple Use Management	BLM	Surface closed to Ag laws	C
OR 54142	PLO 7436	T. 25 S., R. 13 W., Secs. 4–8, 18, 19	See total acres below	North Spit Rec Area and ACEC	BLM	Closed to the mining laws	C
		T. 25 S., R. 14 W., Secs. 12, 13, 23–26		North Spit Rec Area and ACEC	BLM	Closed to the mining laws	C
		Total Acres for OR 54142:	**1,779.27**				
OR 24294	PL 95-450	T. 26 S., R. 14 W., Secs. 5, 8, 17–19	15	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 27 S., R. 14 W., Sec. 19	8	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 28 S., R. 15 W., Secs. 25, 26, 35	3.56	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 29 S., R. 15 W., Sec. 2	4	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 31 S., R. 16 W., Secs. 24, 25, 34, 35	30	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 32 S., R. 16 W., Secs. 2, 3, 10, 17, 21, 28-31	54	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 33 S., R. 15 W., Secs. 6, 8, 21, 22, 33	38	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 34 S., R. 14 W., Sec. 30		Oregon Islands National Wildlife Refuge	USFWS	A	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 34 S., R. 15 W., Sec. 31	31.83	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 36 S., R. 15 W., Secs. 2, 11, 15-17	32	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 38 S., R. 14 W., Secs. 30, 31	12	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 38 S., R. 15 W., Sec. 1	16	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 39 S., R. 14 W., Secs. 6, 8, 16, 17	30	Oregon Islands National Wildlife Refuge	USFWS	A	C
		T. 40 S., R. 14 W., Secs. 4, 16, 22, 26	38	Oregon Islands National Wildlife Refuge	USFWS	A	C
		Total Acres for OR 24294:	**Not available**				
OR 711	PLO 4395	T. 28 S., R. 15 W., Sec. 25	See total acres below	Oregon National Wildlife Refuge	USFWS	B	C
		T. 31 S., R. 16 W., Secs. 24, 25, 34		Oregon National Wildlife Refuge	USFWS	B	C
		T. 31 S., R. 15 W., Sec. 35		Oregon National Wildlife Refuge	USFWS	B	C
		T. 32 S., R. 16 W., Secs. 17, 21, 28–31		Oregon National Wildlife Refuge	USFWS	B	C
		T. 33 S., R. 15 W., Secs. 21, 22, 33		Oregon National Wildlife Refuge	USFWS	B	C
		T. 34 S., R. 15 W., Sec. 4		Oregon National Wildlife Refuge	USFWS	B	C
		T. 36 S., R. 15 W., Secs. 2, 11		Oregon National Wildlife Refuge	USFWS	B	C
		T. 38 S., R. 15 W., Sec. 1		Oregon National Wildlife Refuge	USFWS	B	C
		T. 38 S., R. 14 W., Secs. 30, 31		Oregon National Wildlife Refuge	USFWS	B	C
		T. 39 S., R. 14 W., Secs. 6, 8, 16, 17		Oregon National Wildlife Refuge	USFWS	B	C
		T. 40 S., R. 14 W., Secs. 4, 22		Oregon National Wildlife Refuge	USFWS	B	C
		Total Acres for OR 711:	**222.56**				
OR 50874	PLO 7170	T. 29 S., R. 15 W., Secs. 35, 36	70.9	Lost Lake	BLM	B	C
OR 45401	PLO 6967	T. 30 S., R. 15 W., Secs. 2, 3, 10, 11, 15, 21, 28, 32, 33	963.38	New River ACEC	BLM	B	C
OR 51194	PLO 7170	T. 31 S., R. 15 W., Secs. 7, 8	111.48	Floras Lake	BLM	B	C
OR 51891	PLO 7246	T. 32 S., R. 14 W., Sec. 6	44.48	Edson Creek Recreation Site	BLM	B	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 24293	PL 91-504	T. 40 S., R. 14 W., Sec. 22	21	Oregon Islands National Wildlife Refuge	USFWS	A	C
OR 22376	EO 7035	T. 40 S., R. 14 W., Sec. 35	21	Oregon Islands National Wildlife Refuge	USFWS	B	C
OR 25306	PLO 6287	Unsurveyed islands rocks reefs		Oregon National Wildlife Refuge	USFWS	B	C
OR 11517	EO 5/6/1935	Unsurveyed islands rocks reefs	100	Oregon Islands National Wildlife Refuge Addition	USFWS	B	C
OR 19130	SO of 4/30/1921	T. 27 S., R. 11 W., Sec. 35	40	Water Power Potential/PSC 1	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 10 W., Secs. 6, 8, 12, 14	165.26	Water Power Potential/PSC 1	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19130:	**Not available**				
OR 19140	SO of 6/1/1926	T. 27 S., R. 10 W., Sec. 31	115.35	Water Power Potential/PSC 147	BLM	D	R - unless viable for hydropower
		T. 27 S., R. 11 W., Sec. 35	236.72	Water Power Potential/PSC 147	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 10 W., Secs. 5, 6	169.26	Water Power Potential/PSC 147	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 11 W., Sec. 1	320	Water Power Potential/PSC 147	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19140:	**841.33**				
OR 19144	SO of 7/19/1926	T. 22 S., R. 8 W., Secs. 4*, 7, 9, 17, 21	276.1	Water Power Potential/PSC 162	BLM	D	R - unless viable for hydropower
		T. 22 S., R. 9 W., Secs. 7–9	109.44	Water Power Potential/PSC 162	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 8 W., Sec. 13	80	Water Power Potential/PSC 162	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19144:	**465.54**				
OR 19152	SO of 2/15/1928	T. 22 S., R. 9 W., Sec. 7	183.93	Water Power Potential/PSC 198	BLM	D	R - unless viable for hydropower
OR 20365	EO of 5/28/1912	T. 20 S., R. 9 W., Secs. 26, 28, 32, 34	245.22	Water Power Potential/PSR 273	BLM	D	R - unless viable for hydropower
OR 20365	EO of 5/28/1912	T. 21 S., R. 8 W., Secs. 2*, 4*	320	Water Power Potential/PSR 273	BLM	D	R - unless viable for hydropower
OR 19101	EO of 8/7/1917	T. 20 S., R. 8 W., Secs. 17, 19, 21, 27, 33	186.57	Water Power Potential/PSR 629,	BLM	D	R - unless viable for hydropower
		T. 20 S., R. 9 W., Secs. 21, 25, 27, 31, 33, 35	1,508.32	Water Power Potential/PSR 629	BLM	D	R - unless viable for hydropower
		T. 21 S., R. 8 W., Secs. 1, 9, 11	616.26	Water Power Potential/PSR 629	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19101:	**2,311.15**				
OR 19011	SO of 7/13/1917	T. 20 S., R. 9 W., Secs. 21, 25, 27, 31, 33, 35	1,362.74	Water Power Potential/WPD 11	BLM		R - unless viable for hydropower
		T. 20 S., R. 8 W., Secs. 17, 19, 21, 27, 31, 33	1,586.55	Water Power Potential/WPD 11	BLM		R - unless viable for hydropower

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 21 S., R. 8 W., Secs. 1, 9, 11	1,062.95	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		T. 22 S., R. 9 W., Secs.7, 13, 15*, 17	282.52	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		T. 22 S., R. 8 W., Secs. 5, 21	20.03	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		T. 22 S., R. 7 W., Sec.19	47.45	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 10 W., Secs.1, 11*, 13, 35	37.38	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 9 W., Secs. 7*, 17*, 19*	200.21	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		T. 23S 7 W., Secs. 5, 7, 9, 15, 19*, 21, 23, 27, 31, 33	887.79	Water Power Potential/WPD 11	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19011:	**Not available**				
OR 19102	EO of 6/29/1917	T. 22 S., R. 8 W., Sec. 24	3	Protect water power and reservoir potential/PSR 630	BLM	D	R - unless viable for hydropower.
OR 19105	EO of 7/24/1917	T. 22 S., R. 7 W., Sec. 19	29.93	Water Power Potential/PSR 633	BLM	D	R - unless viable for hydropower
		T. 22 S., R. 8 W., Secs. 5, 21	20.03	Water Power Potential/PSR 633	BLM	D	R - unless viable for hydropower
		T. 22 S., R. 9 W., Secs. 7, 13, 15*, 17	282.52	Water Power Potential/PSR 633	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 7 W., Secs. 5, 7, 9, 15, 19*, 21, 23, 27, 31, 33	887.79	Water Power Potential/PSR 633	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 8 W., Sec. 11	29.38	Water Power Potential/PSR 633	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19105:	**Not available**				
OR 19106	EO of 7/17/1917	T. 22 S., R. 10 W., Sec. 35	239.95	Water Power Potential/PSR 634	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 9 W., Secs. 7*, 17*, 19*	200.21	Water Power Potential/PSR 634	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 10 W., Secs. 1, 13	211.51	Water Power Potential/PSR 634	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19106:	**651.67**				
OR 19109	EO of 7/17/1917	T. 23 S., R. 10 W., Sec. 35	40	Water Power Potential/PSR 645,	BLM	D	R - unless viable for hydropower
OR 19012	SO of 7/13/1917	T. 23 S., R. 10 W., Sec. 35	40	Water Power Potential/WPD 12	BLM	D	R - unless viable for hydropower
OR 19113	EO of 12/12/1917	T. 26S., 9 W., Secs. 17*, 19*, 29*, 31*		Water Power Potential/PSR 659	BLM	D	R - unless viable for hydropower
		T. 27 S., R. 11 W., Sec. 15	182.8	Water Power Potential/PSR 659	BLM	D	R - unless viable for hydropower

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 30 S., R. 9 W., Secs. 9, 17	120	Water Power Potential/PSR 659	BLM	D	R - unless viable for hydropower
		T. 30 S., R. 10 W., Secs. 3, 13	280	Water Power Potential/PSR 659	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19113:	**Not available**				
OR 19014	SO of 12/12/1917	T. 26 S., R. 9 W., Secs. 17*, 19*, 29*, 31*		Water Power Potential/WPD 14	BLM	D	R - unless viable for hydropower
		T. 27 S., R. 11 W., Sec. 15	187	Water Power Potential/WPD 14	BLM	D	R - unless viable for hydropower
		T. 30 S., R. 9 W., Secs. 9, 17	200	Water Power Potential/WPD 14	BLM	D	R - unless viable for hydropower
		T. 30 S., R. 10 W., Sec. 3, 13	280	Water Power Potential/WPD 14	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19014:	**Not available**				
OR 19017	SO of 1/12/1921	T. 27 S., R. 11 W., Secs. 5*, 7†, 17, 19, 21†, 29, 31, 33†	2,418.76	Water Power Potential/WPD 17	BLM	D	R - unless viable for hydropower
		T. 27 S., R. 12 W., Secs. 11*, 13*, 23*, 25*, 27*, 35*	1,663.57	Water Power Potential/WPD 17	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 9 W., Sec. 7	335.2	Water Power Potential/WPD 17	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 10 W., Secs. 3, 5, 9, 11, 15*	1,296.28	Water Power Potential/WPD 17	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 11 W., Secs. 1, 3, 5*, 7	883.12	Water Power Potential/WPD 17	BLM	D	R - unless viable for hydropower
		T. 28 S., R. 12 W., Secs. 1†, 3*, 11*, 13, 15*, 21*	1,516	Water Power Potential/WPD 17	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19017:	**8,112.93**				
OR 19142	SO of 12/4/1926	T. 22 S., R. 10 W., Secs. 15*, 21*, 22*, 26*, 27*, 34*		Water Power Potential/PSC 157	BLM	D	R - unless viable for hydropower
		T. 23 S., R. 10 W., Sec. 2*	76.86	Water Power Potential/PSC 157	BLM	D	R - unless viable for hydropower
		T. 24 S., R. 8 W., Sec. 31*		Water Power Potential/PSC 157	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19142:	**Not available**				
OR 19116	EO of 12/12/1917	T. 26 S., R. 9 W., Secs.10*, 14*	640	Water Power Potential/PSR 662	BLM	D	R - unless viable for hydropower
		T. 32 S., R. 13 W., Secs. 17, PB 37	387	Water Power Potential/PSR 662	BLM	D	R - unless viable for hydropower
		T. 32 S., R. 14 W., Secs. 11, 12	160	Water Power Potential/PSR 662	BLM	D	R - unless viable for hydropower
		Total Acres for OR 19116:	**Not available**				
	EO of 12/12/1910	T. 25 S., R. 12 W., Secs. 29-33	400	Resource Protection/Coal Lands	BLM		Removal/Revocation

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 19180	USGS Order of 7/15/1947	T. 26 S., R. 8 W., Sec. 8	80	Water Power Potential/PSC 382	BLM	D	R - unless viable for hydropower
ORE 013683	PLO 4448	T. 29.5 S., R. 7 W., Sec. 32	4.3	Reclamation Project/Umpqua River	COE	B	C

* Open to entry subject to Section 24 of the Federal Power Act.
† Open to entry in part subject to Section 24 of the Federal Power Act.

Table D-3. Withdrawals in the Eugene District.

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
ORE 05555	BO of 7/12/1957	T. 15 S., R. 7 W., Sec. 7	40	Air Navigation	FAA	A	C
ORE 013117	PLO 3610	T. 18 S., R. 1 E., Sec. 31	See total acres below	Fall Creek Reservoir	COE	B	C
		T. 19 S., R. 1 E., Sec. 6		Fall Creek Reservoir	COE	B	C
Total Acres for ORE 013117:			**81.2**				
OR 19234	PLO 497	T. 17 S., R. 5 W., Secs. 27, 28	5.27	Fern Ridge Reservoir	COE	A	C
OR 19240	PLO 727	T. 19 S., R. 1 E., Sec. 34	1.37	Lookout Point Reservoir	COE	A	C
OR 711	PLO 4395	T. 16 S., R. 12 W., Sec. 33	1	Oregon Islands National Wildlife Refuge	USFWS	B	C
OR 25306	PLO 6287	T. 16 S., R. 12 W., Sec. 33	1	Oregon Islands National Wildlife Refuge	USFWS	B	C
ORE 016183A	PLO 3869	T. 16 S., R. 7 W., Sec. 19	See total acres below	Lake Creek, Whittaker Creek, Clay Creek, Haight Creek, Sharps Creek Recreation Sites	BLM	B	C
		T. 18 S., R. 8 W., Sec. 21		Lake Creek, Whittaker Creek, Clay Creek, Haight Creek, Sharps Creek Recreation Sites	BLM	B	C
		T. 19 S., R. 7 W., Secs. 19, 35		Lake Creek, Whittaker Creek, Clay Creek, Haight Creek, Sharps Creek Recreation Sites	BLM	B	C
		T. 22 S., R. 1 W., Sec. 15		Lake Creek, Whittaker Creek, Clay Creek, Haight Creek, Sharps Creek Recreation Sites	BLM	B	C
Total Acres for ORE 016183A:			**440.12**				
ORE 012093	PLO 5490	All public domain lands in and west of Range 8 East and all lands within the area, which become public domain lands in the future.	9,000.52	Reserved for multiple use management	BLM	Surface closed to ag laws	E
OR 8754	PLO 5229	T. 15 S., R. 1 W., Secs. 29, 30, 31, 32	260	Shotgun Creek Recreation Site	BLM	B	C
OR 46473	PLO 6963	T. 18 S., R. 12 W., Secs. 3, 15	257.6	Florence Sand Dunes	BLM	B	C
OR 48744	PLO 7081	T. 17 S., R. 3 E., Secs. 3, 9, 10, 11	292.25	Eagle Rock Section of McKenzie River	BLM	B	C
OR 19133	SO of 6/7/1922	T. 19 S., R. 7 W., Secs. 21, 25, 35	See total acres below	Protect water power and reservoir development potential/PSC 41	BLM	D	C
		T. 20 S., R. 6 W., Sec. 5		PSC 41	BLM	D	C
Total Acres for OR 19133:			**550.49**				
OR 19148	SO of 5/23/1957	T. 20 S., R. 2 W., Sec. 31	See total acres below	Protect water power and reservoir development potential/PSC 180	BLM	D	C
		T. 21 S., R. 1 W., Secs. 31*, 33, 35		Protect water power and reservoir development potential/PSC 180	BLM	D	C
		T. 21 S., R. 2 W., Sec. 15		PSC 180	BLM	D	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		Total Acres for OR 19148:	**300.6**				
OR 19186	DO of 7/25/1952	T. 16 S., R. 2 E., Secs. 23, 24, 27	276.64	Protect water power and reservoir development potential/PSC 426	BLM	D	C
OR 19040	EO of 7/2/1910	T. 16 S., R. 2 E., Secs. 28*, 34*	See total acres below	Protect water power and reservoir development potential/PSR 95	BLM	D	C
		T. 17 S., R. 2 E., Sec. 2*		PSR 95	BLM	D	C
		T. 17 S., R. 3 E., Sec. 4		PSR 95	BLM	D	C
		Total Acres for OR 19040:	**152.28**				
OR 19059	EO of 7/10/1910	T. 16 S., R. 3 E., Sec. 31*	See total acres below	Protect water power and reservoir development potential/PSR 285	BLM	D	C
		T. 17 S., R. 3 E., Sec. 4		Protect water power and reservoir development potential/PSR 285	BLM	D	C
		Total Acres for OR 19059:	**163.56**				
OR 19113	EO of 12/12/1917	T. 15 S., R. 6 W., Sec. 7	See total acres below	Protect water-power development potential/ PSR 659	BLM	D	C
		T. 16 S., R. 7 W., Sec. 19		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 17 S., R. 8 W., Secs. 1*, 3*, 17†		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 18 S., R. 7 W., Secs. 3*, 31, 33		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 18 S., R. 8 W., Secs. 17*, 21, 27, 35		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 19 S., R. 6 W., Secs. 7, 9, 29, 31		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 19 S., R. 7 W., Secs. 1, 3, 5, 9, 19, 21, 27, 35		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 19 S., R. 8 W., Secs. 3, 11, 13		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 20 S., R. 6 W., Secs. 1, 3, 5, 9, 11		Protect water-power development potential/ PSR 659	BLM	D	C
		T. 20 S., R. 7 W., Sec. 3		Protect water-power development potential/ PSR 659	BLM	D	C
		Total Acres for OR 19113:	**5,961.48**				
OR 19115	EO of 12/12/1917	T. 16 S., R. 2 E., Secs. 29, 33*, 35*	See total acres below	Protect water-power development potential/ PSR 661	BLM	D	C
		T. 17 S., R. 2 E., Sec. 1*		Protect water-power development potential/ PSR 661	BLM	D	C
		T. 17 S., R. 3 E., Secs. 3*, 5*, 9*		Protect water-power development potential/ PSR 661	BLM	D	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 20 S., R. 2 W., Sec. 31		Protect water-power development potential/ PSR 661	BLM	D	C
		T. 21 S., R. 1 W., Secs. 31*, 33, 35		Protect water-power development potential/ PSR 661	BLM	D	C
		T. 21 S., R. 2 W., Secs. 3*, 7*, 31		Protect water-power development potential/ PSR 661	BLM	D	C
		T. 22 S., R. 2 W., Secs. 5, 15, 23		Protect water-power development potential/ PSR 661	BLM	D	C
		T. 23 S., R. 2 W., Sec. 1		Protect water-power development potential/ PSR 661	BLM	D	C
		Total Acres for OR 19115:	**1,103.6**				
OR 19116	EO of 12/12/1917	T. 18 S., R. 8 W., Sec. 28	40	Protect water-power development potential/ PSR 662	BLM	D	C
OR 19127	EO of 2/19/1920	T. 22 S., R. 1 W., Secs. 1*, 5, 9, 15†, 23, 27, 35	1,249.16	Protect water-power development potential/ PSR 661	BLM	D	C
OR 19127	EO of 2/19/1920	T. 23 S., R. 1 W., Secs. 1, 7		PSR 730	BLM	D	C
OR 19014	SO of 12/12/1917	T. 15 S., R. 6 W., Sec. 7	See total acres below	Protect water-power development potential/ WPD 14	BLM	D	C
		T. 16 S., R. 2 E., Secs. 29, 33,* 35*		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 16 S., R. 7 W., Sec. 19		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 17 S., R. 2 E., Sec. 1*		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 17 S., R. 3 E., Secs. 3,* 5,* Sec. 9*		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 17 S., R. 8 W., Secs. 1*, 3*		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 18 S., R. 7 W., Secs. 31, 33		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 18 S., R. 8 W., Secs. 17*, 21, 27, 35		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 19 S., R. 6 W., Secs. 7, 9, 29, 31		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 19 S., R. 7 W., Secs. 1†, 3†, 5, 9, 11*, 19, 21, 27, 35		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 19 S., R. 8 W., Secs. 3, 11, 13		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 20 S., R. 2 W., Sec. 31		Protect water-power development potential/ WPD 14	BLM	D	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 20 S., R. 6 W., Secs. 1, 3, 5, 9, 11		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 20 S., R. 7 W., Sec. 3		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 21 S., R. 1 W., Secs. 31†, 33, 35		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 21 S., R. 2 W., Secs. 3*, 7, 31		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 22 S., R. 1 W., Secs. 1*, 5, 9, 15†, 23, 27, 35		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 22 S., R. 2 W., Secs. 5, 15, 23		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 23 S., R. 1 W., Secs. 1, 7		Protect water-power development potential/ WPD 14	BLM	D	C
		T. 23 S., R. 2 W., Sec. 1		Protect water-power development potential/ WPD 14	BLM	D	C
		Total Acres for OR 19014:	**8,234.24**				
OR 19016	SO of 12/24/1919	T. 23 S., R. 1 W., Sec. 1	80	Protect water power and reservoir development potential/WPD 16	BLM	D	C
OR 52939	PLO 7445	T. 20 S., R. 2 W., Secs. 30, 31, 32, 33, 34	See total acres below	Row River Trail and associated recreation facilities	BLM	B	C
		T. 20 S., R. 3 W., Sec. 25, 36		Row River Trail and associated recreation facilities	BLM	B	C
		T. 21 S., R. 1 W., Secs. 19, 30, 31, 32		Row River Trail and associated recreation facilities	BLM	B	C
		T. 21 S., R. 2 W., Secs. 2, 3, 11, 13, 14, 24		Row River Trail and associated recreation facilities	BLM	B	C
		T. 21 S., R. 3 W., Sec. 1		Row River Trail and associated recreation facilities	BLM	B	C
		T. 22 S., R. 1 W., Sec. 5		Row River Trail and associated recreation facilities	BLM	B	C
		Total Acres for OR 52939:	**178.95**				
OR 50856	PLO 7215	T. 18 S., R. 12 W., Sec. 2	36.52	Pacific Coastline Highway 101	BLM	B	C

* Open to entry subject to Section 24 of the Federal Power Act.
† Open to entry in part subject to Section 24 of the Federal Power Act.

Table D-4. Withdrawals in the Roseburg District.[53]

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 19101	EO of 8/7/1917	T. 20 S., R. 7 W., Secs. 25, 27†, 33*, 35	600	Water Power Potential/PSR 629	BLM	D	C
		T. 21 S., R. 7 W., Secs. 5, 9	392.59	Water Power Potential/PSR 629	BLM	D	C
Total Acres for OR 19101:			**992.59**				
OR 19011	SO of 7/13/1959	T. 20 S., R. 7 W., Secs. 25, 27†, 33*, 35	600	Water Power Potential/WPD 11	BLM	D	C
		T. 21 S., R. 7 W., Secs. 5, 9	392.59	Water Power Potential/WPD 11	BLM		C
		T. 22 S., R. 7 W., Secs. 19, 31	47.45	Water Power Potential/WPD 11	BLM	D	C
		T. 23 S., R. 7 W., Secs. 5, 9*, 15, 23, 27		Water Power Potential/WPD 11	BLM	D	C
		T. 24 S., R. 7 W., Secs. 3, 11, 13*, 15*, 17, 21*, 23, 29*, 33		Water Power Potential/WPD 11	BLM	D	C
		T. 25 S., R. 7 W., Secs. 5*, 7†, 9, 15, 17, 21†, 23, 27		Water Power Potential/WPD 11	BLM	D	C
		T. 26 S., R. 2 W., Secs. 7, 13, 15, 17, 23		Water Power Potential/WPD 11	BLM	D	C
		T. 26 S., R. 3 W., Secs. 1, 9*, 11, 17*		Water Power Potential/WPD 11	BLM	D	C
		T. 26 S., R. 4 W., Sec. 7		Water Power Potential/WPD 11	BLM	D	C
		T. 26 S., R. 6 W., Secs. 5*, 7		Water Power Potential/WPD 11	BLM	D	C
		T. 30 S., R. 3 W., Secs. 25†, 29*, 31, 33†, 35		Water Power Potential/WPD 11	BLM	D	C
		T. 30 S., R. 4 W., Secs. 15, 21, 23, 25†, 27		Water Power Potential/WPD 11	BLM	D	C
Total Acres for OR 19011:			**992.59**				
OR 19105	EO of 7/24/1917	T. 22 S., R. 7 W., Secs. 19, 31	47.45	Water Power Potential/PSR 633	BLM	D	C
		T. 23 S., R. 7 W., Secs. 5, 9*, 15, 23, 27		Water Power Potential/PSR 633	BLM	D	C
		T. 24 S., R. 7 W., Secs. 3, 11, 13*, 15*, 17, 21*, 23, 29*, 33		Water Power Potential/PSR 633	BLM	D	C

[53] **Table D-4** includes withdrawals for the entire Roseburg District, including withdrawals located in the South River Field Office.

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
		T. 25 S., R. 7 W., Secs. 5*, 7†, 9, 15, 17, 21†, 23, 27		Water Power Potential/PSR 633	BLM	D	C
		T. 26 S., R. 6 W., Secs. 5*, 7		Water Power Potential/PSR 633	BLM	D	C
Total Acres for OR 19105:			**Not available**				
OR 19057	EO of 6/4/1912	T. 23 S., R. 7 W., Secs. 21, 32		Water Power Potential/PSR 280	BLM	D	C
		T. 24 S., R. 7 W., Secs. 20*, 28		Water Power Potential/PSR 280	BLM	D	C
		T. 25 S., R. 7 W., Secs. 6†, 7*		Water Power Potential/PSR 280	BLM	D	C
		T. 26 S., R. 2 W., Sec. 21		Water Power Potential/PSR 280	BLM	D	C
		T. 26 S., R. 3 W., Sec. 9*		Water Power Potential/PSR 280	BLM	D	C
		T. 26 S., R. 4 W., Sec. 18*		Water Power Potential/PSR 280	BLM	D	C
		T. 26 S., R. 6 W., Sec. 8		Water Power Potential/PSR 280	BLM	D	C
		T. 30 S., R. 2 W., Sec. 28		Water Power Potential/PSR 280	BLM	D	C
		T. 30 S., R. 4 W., Sec. 25*		Water Power Potential/PSR 280	BLM	D	C
Total Acres for OR 19057:			**Not available**				
OR 19341	PLO 754	T. 24 S., R. 7 W., Secs. 20, 21	28.28	Timber Preservation	BLM	A	C
ORE 016183B	PLO 3869	T. 21 S., R. 6 W., Sec. 1	80	Gunter Recreation Site	BLM	B	C
		T. 24 S., R. 7 W., Sec. 13	23.7	Tyee Recreation Site	BLM	B	C
		T. 25 S., R. 1 W., Sec. 23	20	Scaredman Recreation Site	BLM	B	C
		T. 25 S., R. 1 W., Sec. 24	40	Recreation Site	BLM	B	C
		T. 25 S., R. 1 W., Sec. 25	20	Scaredman Recreation Site	BLM	B	C
		T. 25 S., R. 1 W., Sec. 30	40	Recreation Site	BLM	B	C
		T. 25 S., R. 2 W., Sec. 15	160	Rock Creek Recreation Site	BLM	B	C
		T. 25 S., R. 2 W., Sec. 21	320	Mill Pond Recreation Site	BLM	B	C
		T. 26 S., R. 2 W., Sec. 14	160	Susan Creek Falls	BLM	B	C
		T. 26 S., R. 3 W., Sec. 9	6.44	Lone Rock	BLM	B	C
		T. 27 S., R. 2 W., Sec. 16	178.53	Wolf Creek Trail	BLM	B	C
		T. 27 S., R. 3 W., Sec. 23	80	Cavitt Creek Forest	BLM	B	C
		T. 31 S., R. 8 W., Sec. 35	20	Island Creek Day-Use Area	BLM	B	C
Total Acres for ORE 016183B:			**Not available**				
OR 1102	EO of 6/29/1917	T. 25 S., R. 7 W., Sec. 6		Water Power Potential/PSR 630	BLM	D	C
OR 3660A	PLO 4537	T. 25 S., R. 7 W., Secs. 9, 10, 15	91.88	Umpqua Recreation Site	BLM	B	C
OR 19144	SO of 1/20/1970	T. 25 S., R. 8 W., Sec.12	20.8	Water Power Potential/PSC 162	BLM	D	C
		T. 26 S., R. 6 W., Sec. 30*		Water Power Potential/PSC 162	BLM	D	C
		T. 26 S., R. 5 W., Sec. 26		Water Power Potential/PSC 162	BLM	D	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
Total Acres for OR 19144:			**Not available**				
OR 19153	SO of 6/29/1928	T. 26 S., R. 3 W., Sec. 17*		Water Power Potential/PSC 202	BLM	D	C
OR 44740	PL 100-557	T. 26 S., R. 2 W., Secs. 7, 8, 13–18, 20–24	1,620	North Umpqua Wild and Scenic River	BLM	Various	C
OR 18874	FPC Orders of 12/28/1948 and 5/18/1953	T. 26 S., R. 3 W., Sec. 35		100 foot wide electric transmission line/PP 1927	BLM	B	C
		T. 26 S., R. 2 W., Secs. 7, 13–15, 17, 21, 29–31	110.11	100 foot wide electric transmission line/PP 1927	FERC	B	C
Total Acres for OR 18874:			**Not available**				
OR 19103	EO of 7/10/1917	T. 26 S., R. 2 W., Secs. 7, 13, 15, 17, 23	397.3	Water Power Potential/PSR 631	BLM	D	C
		T. 26 S., R. 3 W., Secs. 1, 9*, 11, 17*		Water Power Potential/PSR 631	BLM	D	C
		T. 26 S., R. 4 W., Sec. 7		Water Power Potential/PSR 631	BLM	D	C
Total Acres for OR 19103:			**Not available**				
OR 19184	SO of 5/29/1951	T. 26 S., R. 2 W., Secs. 14, 22, 24	300	Water Power Potential/PSC 416,	BLM	D	C
OR 19016	SO of 10/24/1919	T. 26 S., R. 2 W., Sec. 21	33.78	Water Power Potential/WPD 16	BLM	D	C
OR 18874	FPC Order of 3/30/1945	T. 26 S., R. 3 W., Secs. 1, 35	12.17	100 foot wide electric transmission line/PP 1927	FERC	B	
OR 5263	PLO 4848	T. 26 S., R. 3 W., Sec. 1	80	Swiftwater Recreation Site	BLM	B	C
		T. 27 S., R. 2 W., Sec. 1	80	Emile Creek Recreation Site	BLM	B	
		T. 27 S., R. 2 W., Sec. 8	80	Little River Wayside	BLM	B	
Total Acres for OR 5263:			**585.95**				
ORE 013683	PLO 4448	T. 29 S., R. 7 W., Secs. 17, 21	60.22	Umpqua River Reclamation Project	BR	B	C
		T. 30 S., R. 7 W., Secs. 5, 6	50.15	Umpqua River Reclamation Project	BR	B	C
Total Acres for ORE 013683:			**110.37**				
OR 19113	EO of 12/12/1917	T. 20 S., R. 7 W., Sec. 3	40	Water Power Potential/PSR 659	BLM	D	C
		T. 29 S., R. 9 W., Sec. 35	40	Water Power Potential/PSR 659	BLM	D	C
		T. 30 S., R. 3 W., Secs. 25†, 29*, 31, 33†, 35		Water Power Potential/PSR 659	BLM	D	C
		T. 30 S., R. 4 W., Secs. 15, 21, 23, 25†, 27		Water Power Potential/PSR 659	BLM	D	C
		T. 30 S., R. 9 W., Sec. 3		Water Power Potential/PSR 659	BLM	D	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
Total Acres for OR 19113:			**Not available**				
OR 19014	SO of 12/12/1917	T. 20 S., R. 7 W., Sec. 3		Water Power Potential/WPD 14	BLM	D	C
		T. 29 S., R. 9 W., Sec. 35	40	Water Power Potential/WPD 14	BLM	D	C
		T. 30 S., R. 9 W., Sec. 3		Water Power Potential/WPD 14	BLM	D	C
Total Acres for OR 19014:			**Not available**				
OR 19152	SO of 2/15/1928	T. 30 S., R. 2 W., Secs. 23, 29, 31		Water Power Potential/PSC 198	BLM	D	C
		T. 30 S., R. 4 W., Sec. 15*		Water Power Potential/PSC 198	BLM	D	C
Total Acres for OR 19152:			**Not available**				
OR 19171	SO of 1/6/1940	T. 30 S., R. 2 W., Sec. 12		Water Power Potential/PSC 315	BLM	D	C
		T. 30 S., R. 3 W., Secs. 19, 29		Water Power Potential/PSC 315	BLM	D	C
		T. 30 S., R. 4 W., Sec. 29		Water Power Potential/PSC 315	BLM	D	C
		T. 31 S., R. 3 W., Sec. 3	83.61	Water Power Potential/PSC 315	BLM	D	C
Total Acres for OR 19171:			**Not available**				
OR 53486	PLO 7413	T. 31 S., R. 7 W., Sec. 4		Iron Mountain Gold Panning Area	BLM	B	C
		T. 30 S., R. 2 W., Sec. 23		Pickett Bridge Recreation Site	BLM	B	C
		T. 30 S., R. 7 W., Sec. 5		Olalla-Thompson Creek Day Use Area	BLM	B	C
		T. 31 S., R. 7 W., Sec. 1		Island Creek Recreation Site	BLM	B	C
Total Acres for OR 53486:			**143.32**				

* Open to entry subject to Section 24 of the Federal Power Act.
† Open to entry in part subject to Section 24 of the Federal Power Act.

Table D-5. Withdrawals in the Salem District.

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 23947	PL 96-199	T. 10 S., R. 11 W., Sec. 30	100	Yaquina Head	BLM, USCG	A	C
OR 8920	PLO 5372	T. 8 S., R. 6 W., Sec. 33	80	Little Sink RNA	BLM	B	C
OR 37275	PL 98-328	T. 7 S., R. 3 E., Secs. 12–14;	See total acres below	Table Rock Wilderness	BLM	A	C
		T. 7 S., R. 4 E., Secs. 7–12, 15–22		Table Rock Wilderness	BLM	A	C
Total Acres for OR 37275:			**5,500**				
ORE 05555	BO of 7/12/1957	T. 15 S., R. 7 W., Sec. 7	110.9	Air Navigation/ANS-58-1, Prairie Mtn.	FAA	B	C
ORE 03060	PLO 989	T. 3 S., R. 5 E., Secs. 26–28	600	Fish Hatchery and Eagle Creek	USFWS	B	C
ORE 015487	PLO 3609	T. 4 S., R. 3 E., Sec. 13	320	Walter Horning Seed Orchard	BLM	B	C
ORE 016183	PLO 3869	T. 3 S., R. 7 W., Sec. 32	35	Alder Glenn Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 14 S., R. 7 W., Secs. 25, 26	40	Alsea Falls Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 9 S., R. 3 E., Sec. 7	80	Canyon Creek Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 12 S., R. 3 E., Sec. 3	80	Dogwood Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 9 S., R. 3 E., Sec. 9	120	Elkhorn Valley Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 9 S., R. 2 E., Sec. 25	160	Fishermen's Bend Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 3 N., R. 3 W., Sec. 21	20	Little Bend Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 7 S., R. 6 W., Secs. 4, 9		Mill Creek Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 14 S., R. 9 W., Sec. 13	40	Missouri Bend Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 3 S., R. 4 E., Sec. 11	160	North Fork Eagle Creek Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 4 N., R. 3 W., Sec. 7	30	Scaponia Recreation Site	BLM	B	C
ORE 016183	PLO 3869	T. 11 S., R. 4 E., Sec. 19	80	Yellowbottom Recreation Site	BLM	B	C
OR 6363	PLO 5136	T. 12 S., R. 7 W., Sec. 28	40	Mary's Peak Administrative Site	USFS	B	C
OR 50856	PLO 7215	T 3 S., R. 10 W., Sec. 30	See total acres below	Pacific Coast Highway	BLM	B	C
		T 4 S., R. 10 W., Secs. 19, 29		Pacific Coast Highway	BLM	B	C
		T 5 S., R. 10 W., Secs. 5, 6, 20		Pacific Coast Highway	BLM	B	C
		T 8 S., R. 11 W., Sec. 3		Pacific Coast Highway	BLM	B	C
		T 9 S., R. 11 W., Sec. 4		Pacific Coast Highway	BLM	B	C
		T .13 S., R. 11 W., Sec. 28		Pacific Coast Highway	BLM	B	C
		T 14 S., R. 12 W., Sec. 35		Pacific Coast Highway	BLM	B	C
Total Acres for OR 50856:			**1,007.2**				

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 18842	FPC Order of 11/17/1924	T. 2 S., R. 4 E., Sec. 1	24	Electric Power Generator/Sandy River - Marmot Dam Bull Run Project/PP 477	FERC	C	C
		T. 2 S., R. 5 E., Secs. 1, 15	24	Electric Power Generator/Sandy River - Marmot Dam Bull Run Project/PP 477	FERC	C	C
Total Acres for OR 18842:			**48**				
OR 19146	SO of 2/26/1927	T. 7 S., R. 3 E., Secs. 1, 5, 11–13, 15, 22–24		Potential Power Development/Molalla River PSC 170	BLM	D	R
OR 19147	SO of 2/26/1927	T. 8 S., R. 8 W., Sec. 35	957	Potential Power Development/Siletz River/PSC 171	BLM	D	R
OR 19166	SO of 1/3/1938	T. 5 N., R. 6 W., Sec. 6	10	Potential Power Development/Nehalem River/PSC 304	BLM	D	R
		T. 5 N., R. 7 W., Sec. 10	40	Potential Power Development/Nehalem River/PSC 304	BLM	D	R
Total Acres for OR 19166:			**50**				
OR 19183	DO of 11/9/1950	T. 14 S., R. 8 W., Secs. 15, 19, 21, 29	240	Potential Power Development/Alsea River/PSC 413	BLM	D	R
		T. 15 S., R. 8 W., Sec. 7	76	Potential Power Development/Alsea River/PSC 413	BLM	D	R
		T. 15 S., R. 9 W., Sec. 1	40	Potential Power Development/Alsea River/PSC 413	BLM	D	R
Total Acres for OR 19183:			**356**				
OR 19038	EO of 7/2/1910	T. 3 N., R. 8 W., Secs. 10, 18	61	Potential Power Development/Nehalem River/PSR 89	BLM	D	R
OR 19074	EO of 10/23/1914	T. 12 S., R. 1 W., Sec. 34	11	Potential Power Development/Santiam River/PSR 458	BLM	D	R
OR 19113, OR 19014	EO of 12/12/1917, SO of 12/12/1917	Various	6,149	Potential Power Development/Alsea, Nehalem, Scappoose and Trask Rivers/PSR 659, WPD 14	BLM	D	R
OR 19115, OR 19014	EO of 12/12/1917, SO of 12/12/1917	Various	10,370	Potential Power Development/Clackamas River/PSR 661, WPD 14	BLM	D	R
OR 19118	EO of 12/12/1917,	Various	1,143	Potential Power Development/Eagle Creek, So. Yamhill, Molalla and N. Santiam Rivers/ PSR 664	BLM	D	R
OR 19127, OR 19014, OR 19016	EO 2/19/1920, SO 12/12/1917, SO of 12/24/1919	Various	1,900	Potential Power Development/Clackamas, Nestucca, Sandy, Santiam Rivers/ PSR 730, WPD 14 and WPD 16	BLM	D	R

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
OR 1572	PLO 4305	T. 14 S., R. 7 W., Sec. 25	132.5	Alsea Falls Recreation Site	BLM	B	C
OR 3660	PLO 4537	T. 2 S., R. 7 E., Sec. 31	280	Wildwood Recreation Site	BLM	B	C
		T. 8 S., R. 4 E., Sec. 31	160	Salmon Falls Recreation Site	BLM	B	C
		T. 14 S., R. 9 W., Sec. 13	10	Missouri Bend Recreation Site	BLM	B	C
Total Acres for OR 3660:			**450**				
OR 19116	EO of 12/12/1917	T. 1 S., R. 6 W., Sec. 28	80	Protect Water Power and Reservoir Potential/PSR 662	BLM	D	C
		T. 3 S., R. 6 W., Secs. 8, 18	188	Protect Water Power and Reservoir Potential/PSR 662	BLM	D	C
		T. 1 S., R. 7 W., Sec. 26	160	Protect Water Power and Reservoir Potential/PSR 662	BLM	D	C
		T. 3 S., R. 7 W., Secs. 24, 26, 28, 32	1,003	Protect Water Power and Reservoir Potential/PSR 662	BLM	D	C
		T. 1 S., R. 8 W., Secs. 21, 22, 28, 29, 30		Protect Water Power and Reservoir Potential/PSR 662	BLM	D	C
Total Acres for OR 19116:			**Not available**				
OR 19187	DO of 1/21/1958	T. 12 S., R. 3 E., Secs. 10, 17, 19, 20, 27, 30	See total acres below	Protect Water Power and Reservoir Potential/PSC 442	BLM	D	C
		T. 12 S., R. 4 E., Sec. 19		Protect Water Power and Reservoir Potential/PSC 442	BLM	D	C
Total Acres for OR 19187:			**Not available**				
OR 44742	PL 100-557	T. 11 S., R. 3 E., Secs. 23–26, 35, 36	See total acres below	Quartzville Creek Wild and Scenic River	BLM	B	C
		T. 12 S., R. 3 E., Secs. 2, 3, 9, 10		Quartzville Creek Wild and Scenic River	BLM	B	C
Total Acres for OR 44742:			**Not available**				
OR 59658	PLO 7685	T. 11 S., R. 3 E., Secs. 25, 26, 35	See total acres below	Quartzville Creek	BLM	B	C
		T. 12 S., R. 3 E., Secs. 2, 3, 9, 10		Quartzville Creek	BLM	B	C
Total Acres for OR 59658:			**Not available**				
OR 44744	PL 100-557	T. 03 S., R. 7 E., Sec. 1	Not available	Salmon Wild and Scenic River	BLM	B	C
OR 59546	PL 104-208	T. 3 S., R. 10 W., Secs. 6, 7, 18, 19, 30,	See total acres below	Oregon Islands Wilderness Additions	BLM	A	C
		T. 5 N., R. 11 W., Sec. 1		Oregon Islands Wilderness Additions	BLM	A	C
Total Acres for OR 59546:			**95**				
OR 44746	PL 100-557	T. 1 S., R. 4 E., Sec. 1	Not available	Sandy Wild and Scenic River	BLM	B	C
OR 53424	PL 104-333	T. 9 S., R. 3 E., Sec. 1	See total acres below	Elkhorn Creek Wild and Scenic River	BLM	B	C
		T. 9 S., R. 4 E., Secs. 5, 6, 7		Elkhorn Creek Wild and Scenic River	BLM	B	C

Serial Number	Order Number	Legal Description	Acres	Purpose Name	Managing Agency	Segregation Effect	Recommendation
Total Acres for OR 53424:			**Not available**				
OR 11517	PLO 6287	Various	Not available	Oregon Islands National Wildlife Refuge	USFWS	B	C
ORE 11235	PLO 2952	T. 12 S., R. 3 E.	860	Green Peter Reservoir	COE	C	C

* Open to entry subject to Section 24 of the Federal Power Act.
† Open to entry in part subject to Section 24 of the Federal Power Act.

Land Tenure Zone 3 Lands

Table D-6 through **Table D-9** contains Land Tenure Zone 3 lands that are available for disposal.

Table D-6. Land Tenure Zone 3 lands in the Coos Bay District.

Township	Range	Section	Subdivision	Acres	Status
19 S.	12 W.	1	Lots 1 and 2	40.48	PD
20 S.	09 W.	33	Lot 7	3.98	OC
20 S.	10 W.	31	Por. lot 10	5.98	PD
20 S.	11 W.	36	Por. lot 9		
21 S.	11 W.	31	Lot 18	37.22	PD
21 S.	11 W.	32	Lots 16 and 23	59.01	PD
22 S.	08 W.	15	Lots 9 and 10	25.30	OC
22 S.	08 W.	21	Lots 7 and 14	2.42	OC
22 S.	13 W.	14	Lots 1 and 2	71.10	PD
25 S.	11 W.	30	Lot 5	39.92	PD
25 S.	13 W.	7	Lots 6, 8, 13 – 15	92.78	PD
25 S.	13 W.	18	Lot 7, E½NE¼NW¼, E½SE¼NW¼	56.15	PD
26 S.	08 W.	10	SE¼NE¼	40	PD
26 S.	11 W.	8	NW¼NE¼	40	PD
26 S.	12 W.	9	Por. SE¼SW¼	4	ACQ
26 S.	14 W.	3	Por. Lots 1 and 2, SE¼NW¼	62.18	PD
26 S.	14 W.	28	NW¼NE¼	40	PD
28 S.	12 W.	19	SE¼SE¼	40	CBWR
30 S.	12 W.	5	Lot 6	1.80	OC
30 S.	12 W.	6	Lots 3 and 4	1.14	PD
30 S.	13 W.	21	N½NE¼NW¼	20	PD
32 S.	14 W.	7	N½SW¼NE¼NW¼	5	PD
32 S.	15 W.	4	NE¼SE¼NE¼, S½NE¼NE¼, W1/2SE¼NE¼, Lots 1 – 4	71.75	PD
39 S.	12 W.	8	W½NW¼	80	PD
			Grand Total	**840.21**	**-**

Table D-7. Land Tenure Zone 3 lands in the Eugene District.

Township	Range	Section	Subdivision	Acres	Status
14S.	1E.	19	W½NE¼	80	PD
14S.	1E.	26	SE¼NE¼	40	PD
14S.	1E.	33	NE¼SE¼	40	OC
14 S.	2 E.	6	NE¼SW¼	40	PD
14 S.	3 E.	19	Lot 1	37.02	PD
15 S.	2 W.	25	Por. SE¼SE¼	16.19	OC
16 S.	3 W.	30	Lot 3	15.28	PD
16 S.	5 W.	33	Lots 4, 7, and 8, and un-numbered lot	5.66	OC
16 S.	6 W.	7	Lot 6	3.76	OC
16 S.	2 E.	27	S½SE¼, NE¼NW¼	120	OC
16 S.	2 ½ E.	1	All	32.81	PD
17 S.	1 W.	19	NW¼NE¼	40	OC
17 S.	1 W.	31	Lot 3, SW¼SW¼, SW¼SE¼	125.58	OC
17 S.	3 W.	15	Lot 6	0.85	OC
17 S.	6 W.	35	SE¼SE¼	40	OC
17 S.	11 W.	19	Lot 1	44.82	PD
18 S.	1 W.	5	Por. lot 8	0.84	OC
18 S.	1 W.	26	Lot 7	1.68	PD
18 S.	2 W.	1	Lots 1 - 4, SW¼NW¼	270.41	OC
18 S.	4 W.	33	SW¼NW¼	40	OC
18 S.	4 W.	35	SE¼NE¼	40	OC
18 S.	5 W.	15	NW¼NW¼	40	OC
18 S.	5 W.	23	SW¼NW¼, W½SW¼	120	OC
18 S.	7 W.	11	Por. NE¼NE¼	3	OC
18 S.	9 W.	7	SE¼SW¼	40	OC
18 S.	10 W.	11	Lot 9	6.24	PD
18 S.	11 W.	18	SE¼SE¼	40	PD
18 S.	12 W.	15	SE¼NE¼	40	PD
19 S.	3 W.	29	SE¼SW¼	40	OC
19 S.	3 W.	35	Lot 3	2.79	OC
19 S.	4 W.	29	Por. NE¼SW¼	0.36	OC
19 S.	4 W.	31	Lot 1, SW¼SE¼	81.33	OC
19 S.	5 W.	1	S½SW¼	80	OC
20 S.	4 W.	6	NE¼NE¼	40.23	PD
20 S.	4 W.	25	SE¼SW¼	40	OC
21 S.	2 W.	7	Lot 1	41.37	OC
21 S.	1 W.	31	Lot 13	1.42	OC
21 S.	4 W.	1	N½NE¼, NW¼NW¼	120	OC
22 S.	1 W.	5	Por. lot 18	2.20	OC
22 S.	3 W.	7	Lots 1 and 2	91.46	OC
			Grand Total	**1,865.30**	**-**

Table D-8. Land Tenure Zone 3 lands in the Roseburg District.[54]

Township	Range	Section	Subdivision	Acres	Status
24 S.	5 W.	29	Lot 5	28	OC
24 S.	6 W.	27	W½, SW¼SE¼	360	OC
25 S.	6 W.	3	NW¼NE¼, NE¼SW¼, NE¼SE¼	122	OC
25 S.	6 W.	33	SE¼SE¼	40	OC
26 S.	2 W.	17	NE¼NE¼SE¼SE¼ (part North of Highway 138)	0.3	OC
26 S.	4 W.	10	Lot 1	7	PD
26 S.	4 W.	17	Lots 9 and 10	12	OC
26 S.	6 W.	17	Lot 2, SE¼NW¼, SE¼SW¼, SW¼SE¼	126	OC
26 S.	6 W.	3	SE¼NE¼, NE¼SE¼	80	OC
27 S.	4 W.	7	Lot 2	4	OC
28 S.	4 W.	29	SE¼NE¼	40	OC
28 S.	5 W.	28	NW¼NW¼	40	PD
28 S.	5 W.	29	E½NE¼	80	OC
30 S.	2 W.	34	SE¼SW¼	40	PD
30 S.	4 W.	1	Lot 9	4	OC
30 S.	6 W.	18	Lots 1 and 2	39	PD
			Grand Total	**1,022.3**	**-**

[54] **Table D-8** includes Land Tenure Zone 3 for the entire Roseburg District, including withdrawals located in the South River Field Office.

Table D-9. Land Tenure Zone 3 lands in the Salem District.

Township	Range	Section	Subdivision	Acres	Status
3 N.	1 W.	9	Lot 8	1.24	Ot
3 N.	8 W.	10	NW¼NE¼	40	PD
3 N.	8 W.	11	Lot 2	0.01	PD
5 N.	6 W.	6	Lot 9	2.12	PD
5 N.	7 W.	10	SW¼NE¼	40	PD
7 N.	4 W.	6	Lot 7	0.03	PD
1 S.	3 W.	7	Lot 1	0.18	OC
1 S.	3 W.	8	Lot 1	0.05	PD
2 S.	2 E.	4	Lot 2	0.04	PD
2 S.	2 E.	9	Lot 7	0.11	Ot
2 S.	3 E.	23	Lots 8 and 12	6.25	OC
2 S.	3 E.	25	Lots 7 and 8	1.69	OC
2 S.	3 W.	13	N½SW¼	80	OC
2 S.	3 W.	23	N½NE¼, NE¼NW¼	120	OC
2 S.	4 W.	31	Lot 1	1.30	OC
3 S.	2 E.	7	Lot 1	0.87	OC
3 S.	4 W.	33	Lot 4	0.11	OC
3 S.	9 W.	20	NW¼NE¼	40	PD
3 S.	9 W.	28	SW¼SE¼	40	PD
3 S.	9 W.	33	NW¼NE¼	40	PD
3 S.	10 W.	30	Lot 15	0.45	PD
4 S.	1 E.	21	Lot 1	0.49	OC
4 S.	2 E.	11	NE¼NE¼, SW¼NE¼, E½SW¼, NW¼SE¼	200	OC
4 S.	2 E.	15	NW¼SE¼	40	OC
4 S.	2 E.	33	Lot 1	0.1	OC
4 S.	3 E.	9	SW¼NE¼, NW¼SE¼	80	OC
4 S.	3 E.	19	Un-numbered lot in SW¼SW¼	47.31	OC
4 S.	3 E.	21	E½NE¼, SW¼NW¼, N½SW¼	200	OC
4 S.	3 E.	29	E½NE¼	80	OC
4 S.	3 E.	31	S½NE¼, NW¼SE¼	120	OC
4 S.	1 W.	22	Un-numbered lot	0.5	PD
4 S.	3 W.	2	Lot 1	0.25	PD
4 S.	3 W.	34	Lots 1 and 2	4.4	PD
4 S.	10 W.	28	Lot 3	0.53	PD
5 S.	3 W.	4	Lot 1	1.16	PD
5 S.	5 W.	13	Lot 3	0.05	OC
5 S.	5 W.	31	Lot 1	3.57	OC
5 S.	5 W.	34	Lot 1	0.93	PD
5 S.	5 W.	35	Lot 1	8	OC
6 S.	3 W.	2	Lot 2	0.2	PD
6 S.	3 W.	5	Lot 1	2	OC
6 S.	1 E.	13	E½NW¼, SW¼NW¼	120	OC

Township	Range	Section	Subdivision	Acres	Status
6 S.	1 E.	25	NW¼NE¼, SE¼NW¼	80	OC
6 S.	9 W.	32	W½SE¼	80	PD
6 S.	9 W.	34	NW¼SE¼	40	PD
6 S.	10 W.	35	SE¼NE¼	40	PD
7 S.	1 E.	1	SE¼SW¼	40	OC
7 S.	3 W.	29	Lot 3	5.42	OC
7 S.	6 W.	34	SW¼SE¼	40	OC
8 S.	1 E.	3	SW¼NW¼, SW¼	200	OC
8 S.	1 E.	27	NE¼SW¼	40	OC
8 S.	1 E.	35	Lots 1 and 2, NW¼NW¼, S½	400.22	OC
8 S.	4 W.	24	M&B	1.54	Ot
8 S.	4 W.	25	M&B	8	Ot
8 S.	10 W.	20	W½NW¼NW¼	20	PD
8 S.	11 W.	3	Lot 8	4.73	PD
9 S.	1 W.	21	Lot 7, NW¼NE¼	84.21	OC
9 S.	3 W.	21	Lot 3	0.08	Ot
9 S.	3 W.	24	Un-numbered lot	1.4	PD
9 S.	3 W.	32	Lot 2	4.6	PD
9 S.	4 W.	9	Lot 5	1.16	OC
9 S.	4 W.	14	Lot 9	0.17	PD
9 S.	9 W.	19	Por. lot 29	10	PD
9 S.	9 W.	33	Lot 17	20	PD
9 S.	9 W.	34	W½NW¼SW¼	20	PD
9 S.	10 W.	26	SW¼NW¼	40	PD
9 S.	10 W.	36	Por. Lots 5 and 6	10	PD
9 S.	11 W.	1	Lot 6	1.46	PD
9 S.	11 W.	4	SW¼SW¼	40	PD
10 S.	2 W.	8	Lot 1	6.13	PD
10 S.	3 W.	24	Lot 6	0.9	PD
10 S.	4 W.	11	Lot 5	1.52	OC
10 S.	5 W.	19	Lots 1 – 4, NE¼, E½NW¼, E½SW¼	480	OC
10 S.	5 W.	23	Lot 4	0.79	OC
10 S.	6 W.	22	Lots 2 and 3	15.7	PD
10 S.	7 W.	18	SW¼NE¼, SE¼SW¼, W½SE¼	160	PD
10 S.	10 W.	2	Lot 20	20	PD
11 S.	8 W.	6	NE¼SW¼, NW¼SE¼, SE¼SE¼	120	PD
11 S.	9 W.	31	Lot 2	43.25	PD
11 S.	10 W.	12	N½NE¼, NW¼SW¼, NE¼SE¼	160	PD
11 S.	10 W.	14	Lot 1	2.87	PD
11 S.	10 W.	23	NE¼SE¼	40	PD
11 S.	10 W.	24	SW¼SW¼	40	PD
11 S.	10 W.	25	Lot 1	37.22	PD
11 S.	10 W.	35	SE¼SE¼	40	PD
12 S.	4 E.	30	SE¼SW¼	40	PD

Township	Range	Section	Subdivision	Acres	Status
12 S.	4 E.	31	Lot 1, NE¼NW¼	84.81	PD
12 S.	2 W.	13	Lot 6	7.04	Ot
12 S.	6 W.	35	Lot 3	0.2	Ot
12 S.	8 W.	6	Lot 7	40.18	PD
12 S.	8 W.	7	Lots 1 and 2	79.04	PD
12 S.	9 W.	29	E½NE¼, SE¼SE¼	120	PD
12 S.	9 W.	32	E½NE¼, SW¼NE¼	120	PD
12 S.	9 W.	34	NE¼NW¼	40	PD
12 S.	9 W.	35	NE¼NW¼, S½SW¼	120	PD
12 S.	10 W.	6	SW¼SE¼	40	PD
12 S.	10 W.	14	NE¼NE¼	40	PD
12 S.	11 W.	10	Lots 3 and 4	76.16	PD
12 S.	11 W.	17	Lot 5	38.84	PD
13 S.	3 E.	9	NE¼NE¼	40	PD
13 S.	2 E.	24	N½NE¼, SE¼NE ¼	120	PD
13 S.	2 W.	21	NW¼NE¼	40	OC
13 S.	4 W.	30	Lot 5	8.49	PD
13 S.	5 W.	29	Lot 1	0.84	OC
13 S.	9 W.	10	E½NE¼, NE¼SE¼	120	PD
13 S.	9 W.	13	NW¼NW¼	40	PD
13 S.	11 W.	3	SW¼SE¼	40	PD
13 S.	11 W.	28	Lot 9	7.6	PD
13 S.	11 W.	33	NE¼SE¼	40	PD
14 S.	5 W.	25	Lot 1	0.26	OC
14 S.	11 W.	3	Lots 1, 2, and 25	111.5	PD
14 S.	11 W.	4	Lots 29 and 30	84.3	PD
14 S.	11 W.	5	Lot 10	40.62	PD
14 S.	11 W.	6	Lot 16	40	PD
14 S.	11 W.	10	Lots 1, 11–13, and 17	210.21	PD
14 S.	11 W.	15	NE¼SE¼	40	PD
14 S.	12 W.	35	SE¼NE¼	40	PD
15 S.	5 W.	6	Lot 5	1.46	PD
			Grand Total	**5,596.86**	**-**

Inventory of Communication Sites

Table D-10 through **Table D-13** contains information on existing communication sites. The RMP contains management direction related to management of communication sites.

Table D-10. Communication sites in the Coos Bay District.

Site Name	Township	Range	Section	Quarter Section
Roman Nose	19 S.	9 W.	23	NE¼ and NW¼
John's Peak	23 S.	9 W.	27	SW¼
Blue Ridge	26 S.	12 W.	35	SW¼
Signal Tree	29 S.	9 W.	33	SW¼
Anderson Mountain	29 S.	11 W.	21	SW¼
Sugar Loaf	29 S.	12 W.	23	NE¼
Bennett Butte	30 S.	13 W.	20	NW¼
Edson Butte	31 S.	14 W.	23	NW¼
Grizzly Mountain	37 S.	14 W.	4	SE¼
Bosley Butte	39 S.	13 W.	10	SE¼
Palmer Butte	40 S.	13 W.	10	SE¼
Black Mound	40 S.	13 W.	20	SW¼

Table D-11. Communication sites in the Eugene District.

Site Name	Township	Range	Section	Quarter Section
Horse Rock	15 S.	2 W.	1	NW¼
Mt. Tom	15 S.	2 W.	31	SW¼
Buck Mountain	16 S.	2 W.	7	NW¼
South McGowan	16 S.	2 W.	31	NW¼
Amy Road	16 S.	7 W.	1	NW¼ and SW¼
Elk Mountain	16 S.	8 W.	26	NE¼
Windy Peak	16 S.	8 W.	27	SW¼
Black Canyon	17 S.	2 W.	7	SW¼
Camp Creek Ridge	17 S.	2 W.	15	NE¼
Badger Mountain	17 S.	7 W.	35	NE¼
Vaughn Hill	18 S.	6 W.	5	SE¼ and NE¼
Brickerville	18 S.	10 W.	3	NW¼
High Point	19 S.	6 W.	23	NW¼
Eagle's Rest	20 S.	1 W.	12	NE¼
Cougar Mountain	20 S.	3 W.	1	NE¼
Hawley Butte	21 S.	1 W.	29	NE¼
Hobart Butte	22 S.	3 W.	1	NW¼
Laurel Butte	22 S.	3 W.	23	SE¼
Huckleberry Mountain	24 S.	1 W.	6	SW¼

Table D-12. Communication sites in the Roseburg District.[55]

Site Name	Township	Range	Section	Quarter Section
Yellow Butte	23 S.	6 W.	27	NW¼
Lane Mountain	27 S.	4 W.	25	NE¼
Kenyon Mountain	30 S.	9 W.	3	NW¼
Canyon Mountain	31 S.	5 W.	3	SW¼

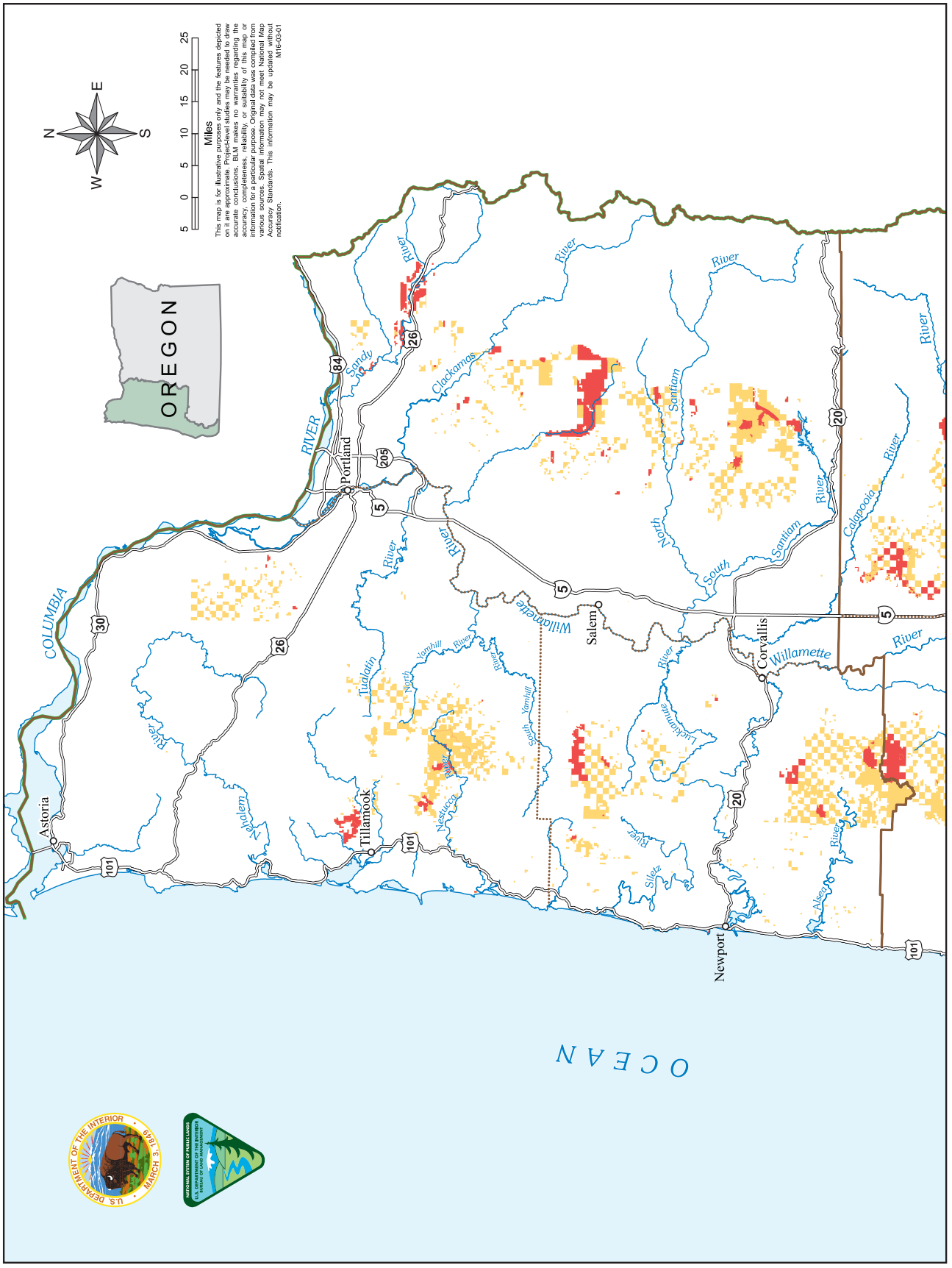
Table D-13. Communication sites in the Salem District.

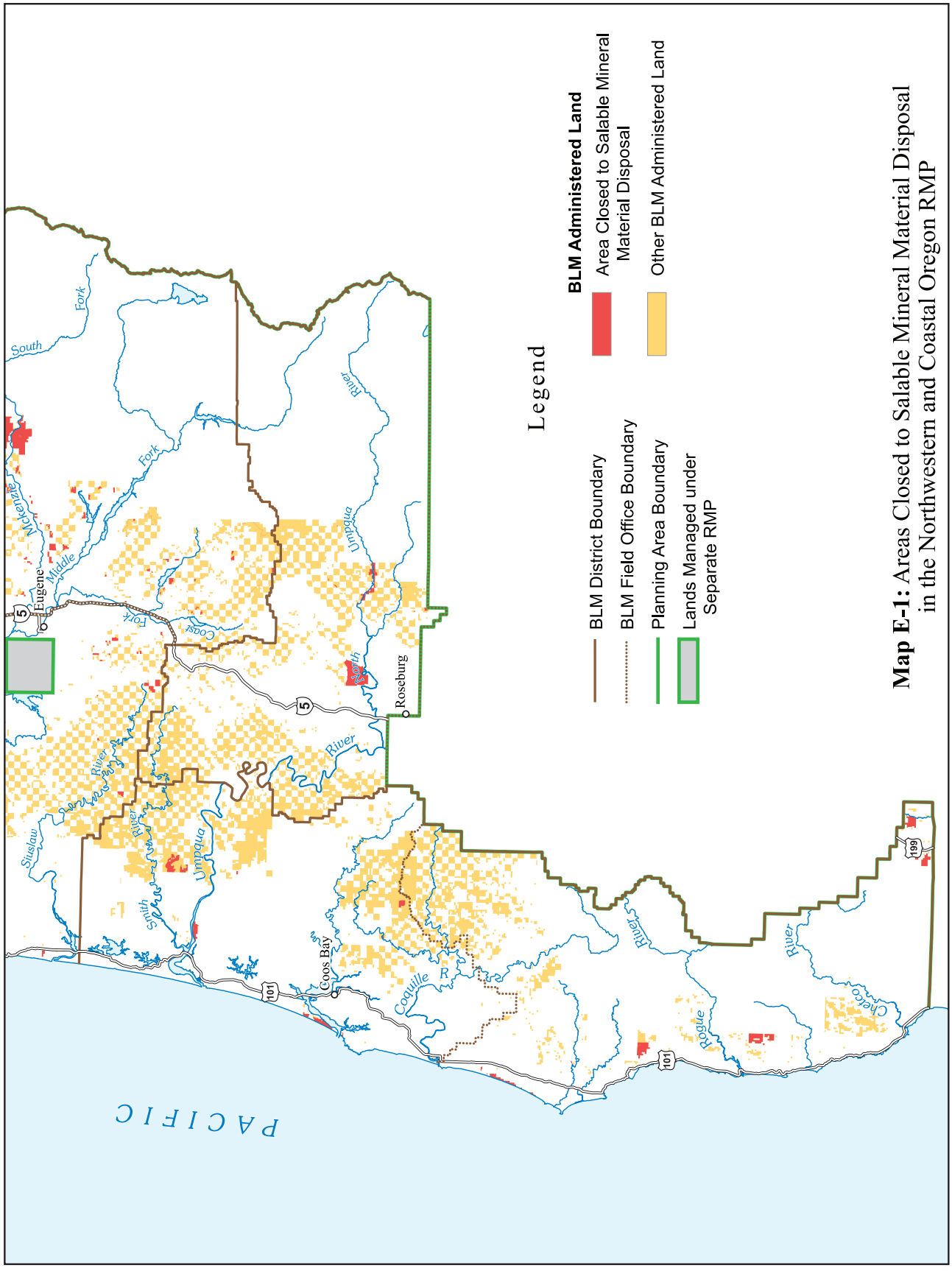
Site Name	Township	Range	Section	Quarter Section
Lookout Point	1 S.	5 E.	13	SE¼
Blind Cabin Ridge	1 S.	5 W.	31	NE¼
Dixie Mountain	2 N.	2 W.	27	NE¼
Brightwood	2 S.	6 E.	14	NW¼
Trask Mountain	2 S.	6 W.	29	NW¼
High Heaven	3 S.	5 W.	33	SE¼
Bald Mountain	3 S.	6 W.	29	SW¼
Goat Mountain	5 S.	4 E.	14	SW¼
Prospect Hill	8 S.	4 W.	24	SE¼
Mt. Horeb	9 S.	4 E.	17	NE¼
Snow Peak	11 S.	2 E.	5	NW¼
Yellowstone Mountain	11 S.	3 E.	32	NW¼
Prairie Mtn. East	15 S.	7 W.	4	SE¼
Prairie Mtn.	15 S.	7 W.	7	SW¼
Prairie Mtn. West	15 S.	7 W.	7	SW¼

[55] **Table D-12** includes communication sites for the entire Roseburg District, including withdrawals located in the South River Field Office.

Appendix E – Energy and Minerals

This appendix contains a map of areas closed to salable mineral material disposal (**Map E-1**) and the proposed stipulations on leasable fluid mineral exploration and development activity.


N
W
E
S
Miles
0 5 10 15 20 25
5
This map is for illustrative purposes only and the features depicted on it are approximate. Precise features may be located at other accurate coordinates. BLM makes no warranties regarding the accuracy, completeness, reliability, or suitability of this map or information for a particular purpose. Original data was compiled from various sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
M16-03-01
OREGON
COLUMBIA
RIVER
Portland
Astoria
Tillamook
Salem
Corvallis
Newport
Sandy
Clackamas
Santiam
North
South
Willamette
Tualatin
Yamhill
Nestucca
Siletz
Alsea
Siuslaw
Lukiamute
Luckiamute
Calapooia
OCEAN
5
26
84
205
30
101
20



Map E-1: Areas Closed to Salable Mineral Material Disposal in the Northwestern and Coastal Oregon RMP

Proposed Stipulations on Leasable Fluid Mineral Exploration and Development Activity

Apply the following special stipulations for all forms of leasable fluid minerals, including geothermal, on specifically designated tracts of land as identified below.

No Surface Occupancy
Resource: **Eligible Wild and Scenic River segments**
Stipulation: Surface occupancy and use are prohibited within all eligible Wild and Scenic River segments.
Objective: To protect eligible Wild and Scenic River segments.
Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The boundaries of the stipulated area may be modified by the Authorized Officer, if the eligible Wild and Scenic River segment boundaries are changed.
Waiver: This stipulation may be waived, if the Authorized Officer determines that the entire leasehold no longer contains eligible Wild and Scenic River segments.

No Surface Occupancy
Resource: **District-Designated Reserve – Lands Managed for Their Wilderness Characteristics**
Stipulation: Surface occupancy and use are prohibited within District-Designated Reserve – Lands Managed for Their Wilderness Characteristics.
Objective: To protect District-Designated Reserve – Lands Managed for Their Wilderness Characteristics lands.
Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The boundaries of the stipulated area may be modified by the Authorized Officer, if the District-Designated Reserve – Lands Managed for Their Wilderness Characteristics boundaries are changed.
Waiver: This stipulation may be waived, if the Authorized Officer determines that the entire leasehold no longer contains District-Designated Reserve – Lands Managed for Their Wilderness Characteristics

No Surface Occupancy
Resource: **Land Use Authorizations**
Stipulation: Surface occupancy and use is prohibited on Recreation and Public Purposes (R&PP) and FLPMA leases.
Objective: To protect uses on existing R&PP and FLPMA leases.
Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The area affected by this stipulation may be modified by the Authorized Officer, if the land use authorization boundaries are modified.

Waiver: This stipulation may be waived by the Authorized Officer, if all land use authorizations within the leasehold have been terminated, canceled, or relinquished.

No Surface Occupancy
Resource: **Recreation Management Areas**
Stipulation: Surface occupancy and use are prohibited within Recreation Management Areas.
Objective: To protect developed recreation areas.
Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The boundaries of the stipulated area may be modified by the Authorized Officer, if the Recreation Management Area boundaries are changed.
Waiver: This stipulation may be waived, if the Authorized Officer determines that the entire leasehold no longer contains Recreation Management Areas.

No Surface Occupancy
A 30-day public notice period will be required prior to modification or waiver of this stipulation.
Resource: **Special Areas**
Stipulation: Surface occupancy and use are prohibited within Areas of Critical Environmental Concern (ACEC).
Objective: To protect important historic, cultural, scenic values, natural resources, natural systems or processes, threatened and endangered plant species, and/or natural hazard areas of the ACEC.
Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The boundaries of the stipulated area may be modified by the Authorized Officer, if the ACEC boundaries are changed.
Waiver: This stipulation may be waived, if the Authorized Officer determines that the entire leasehold no longer contains designated ACECs.

No Surface Occupancy
Resource: **Progeny test sites**
Stipulation: Surface occupancy and use are prohibited within progeny test sites.
Objective: To protect progeny test sites.
Exception: None.
Modification: The boundaries of the stipulated area may be modified by the Authorized Officer, if the progeny test site boundaries are changed.
Waiver: This stipulation may be waived, if the Authorized Officer determines that the entire leasehold no longer contains progeny test sites.

No Surface Occupancy
A 30-day public notice period will be required prior to modification or waiver of this stipulation.
Resource: **Visual Resource Management (VRM) Class I**
Stipulation: Surface occupancy and use are prohibited in VRM Class I areas.
Objective: To preserve the existing character of the landscape.

Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The boundaries of the stipulated area may be modified by the Authorized Officer, if the boundaries of the VRM Class I area are changed.
Waiver: This stipulation may be waived by the Authorized Officer, if all VRM Class I areas within the leasehold are reduced to a lower VRM class. Areas reduced to VRM Class II will be subject to the Controlled Surface Use stipulation for visual resources, and areas reduced to VRM Class III will be subject to standard lease stipulations.

Controlled Surface Use
Resource: **Soils**
Stipulation: Prior to disturbance of any suspected unstable slopes or slopes over 60 percent, an engineering/reclamation plan must be approved by the Authorized Officer. This plan must demonstrate how the following will be accomplished:

- Restoration of site productivity
- Adequate control of surface runoff
- Protection of off-site areas from accelerated erosion, such as rilling, gullying, piping, and mass wasting

In addition, water quality and quantity will be in conformance with State and Federal water quality laws, surface-disturbing activities will not be conducted during extended wet periods, and construction will not be allowed when soils are frozen.
Objective: To maintain soil productivity, provide necessary protection to prevent excessive soil erosion on steep slopes, and to avoid areas subject to slope failure, mass wasting, piping, or having excessive reclamation problems.
Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan, which demonstrates that the impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The area affected by this stipulation may be modified by the Authorized Officer, if it is determined that portions of the area do not include suspected unstable slopes or slopes over 60 percent.
Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does not include any suspected unstable slopes or slopes over 60 percent.

Controlled Surface Use
A 30-day public notice period will be required prior to modification or waiver of this stipulation.
Resource: **Visual Resource Management (VRM) Class II**
Stipulation: All surface-disturbing activities and semi-permanent and permanent facilities in VRM Class II areas may require special design features including altering the location and painting and camouflage to blend with the natural surroundings to meet the visual quality objectives for the area.
Objective: To control the visual impacts of activities and facilities within acceptable levels.
Exception: None.
Modification: None.
Waiver: This stipulation may be waived, if the Authorized Officer determines that there are no longer any VRM Class II areas in the leasehold.

Controlled Surface Use
Resource: **Riparian Reserve**
Stipulation: Unless otherwise authorized, drill site construction and access through Riparian Reserve within this leasehold will be limited to established roadways.
Objective: To protect riparian vegetation and reduce sedimentation.
Exception: An exception to this stipulation may be granted by the Authorized Officer, if the operator submits a plan, which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The area affected by this stipulation may be modified by the Authorized Officer, if it is determined that portions of the area do not include Riparian Reserve.
Waiver: This stipulation may be waived by the Authorized Officer, if it is determined that the entire leasehold no longer includes Riparian Reserve.

Controlled Surface Use
Resource: **Late-Successional Reserve**
Stipulation: Unless otherwise authorized, drill site construction and access through Late-Successional Reserve within this leasehold will be limited to established roadways.
Objective: To protect vegetation and to retain and/or restore structurally-complex forest characteristics.
Exception: An exception to this stipulation may be granted by the Authorized Officer if the operator submits a plan, which demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.
Modification: The area affected by this stipulation may be modified by the Authorized Officer, if it is determined that portions of the area do not include Late-Successional Reserve.
Waiver: This stipulation may be waived by the Authorized Officer if it is determined that the entire leasehold does not include Late-Successional Reserve.

Appendix F – Areas of Critical Environmental Concern

This appendix provides detailed information about special management needs and relevant and important values for designated Areas of Critical Environmental Concern (ACECs) for the Coos Bay District, Eugene District, the Swiftwater Field Office of the Roseburg District, and Salem District.

Areas of Critical Environmental Concern, defined in the FLPMA, represent areas within the public lands where special management attention is required to protect or to prevent irreparable damage to any of the following categories:

- Important historic, cultural, or scenic values
- Fish and wildlife resources
- Other natural processes or systems
- Safety from natural hazards

The BLM develops special management direction to protect relevant and important values, but does not apply special management when other management mechanisms adequately protect the relevant and important values or where designation is not warranted.

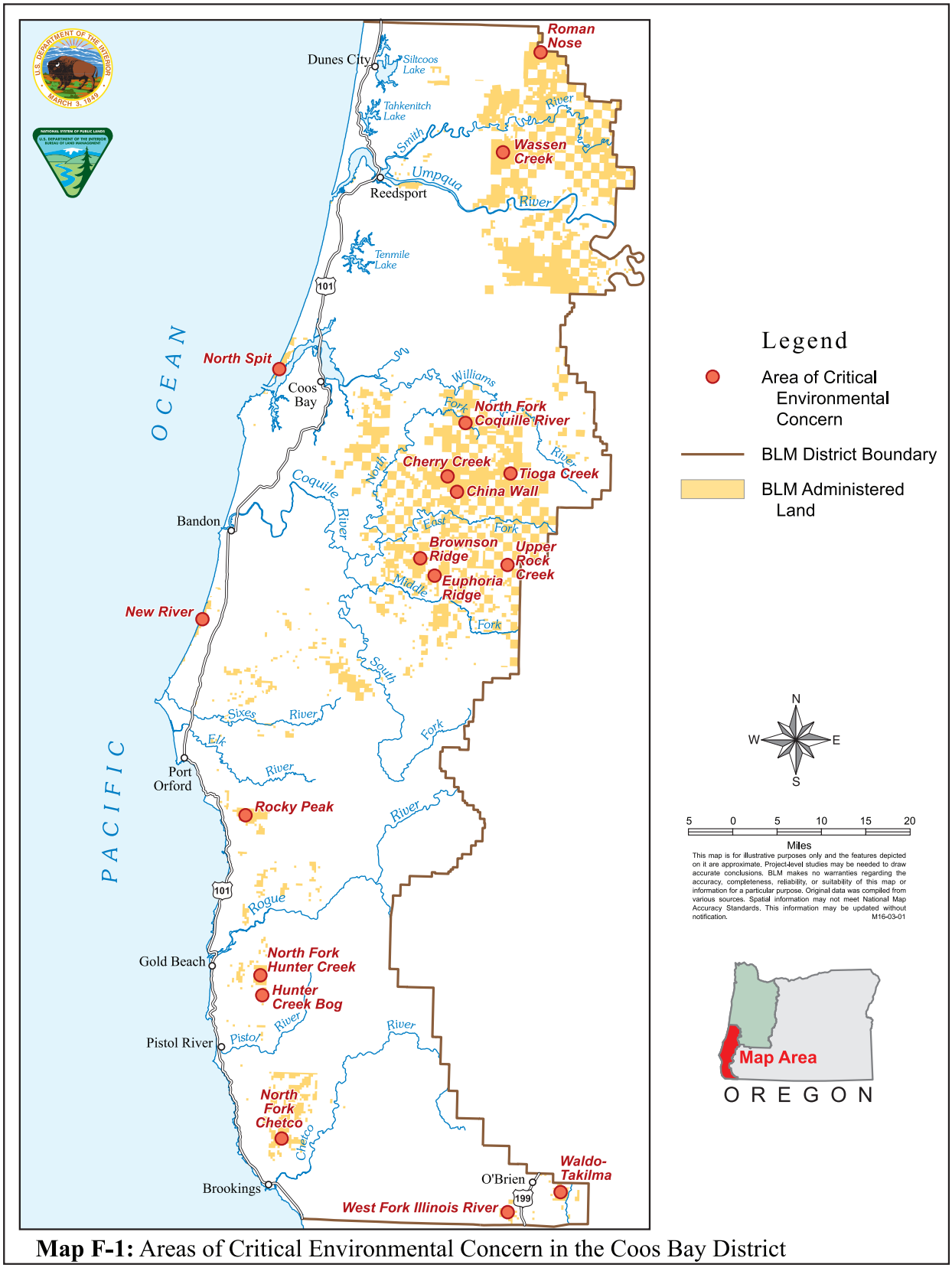
The BLM designs some special management attention to move the relevant and important value onto a trajectory to reach a desired condition. The BLM designs other special management attention to protect the relevant and important values from management actions or other human activities. This may include prohibiting or modifying certain management activities.

Research Natural Areas (RNAs) represent a specific type of ACEC. These areas are established and maintained for the primary purpose of research and education because the area has one or more of the following characteristics:

- Typical representation of a common plant or animal association
- Unusual plant or animal association
- ESA-listed plant or animal species
- Typical representation of common geologic, soil, or water feature
- Outstanding or unusual geologic, soil, or water feature

Outstanding Natural Areas are also specific types of ACECs. Outstanding Natural Area designations aim to protect unique scenic, scientific, educational, and recreational values of certain areas within the public lands. It is important to note that, when applied by Congress, the term ‘outstanding natural area’ has a different meaning than when the BLM applies it through a planning decision to create a type of ACEC. A congressionally designated ‘outstanding natural area’ provides permanent protection for the values for which Congress designated the area.

Coos Bay



Map F-1: Areas of Critical Environmental Concern in the Coos Bay District

Table F-1. Special Management Needs for Designated Areas of Critical Environmental Concern within the Coos Bay District in the Northwestern and Coastal Oregon ROD/RMP plan boundary.

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Brownson Ridge	398	Natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Low potential, withdrawal not necessary	Manage vegetation (including timber harvest) to promote late-successional structure in younger stands
Cherry Creek RNA	579	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Withdrawn in 1965 by PLO 3530	No timber harvest
China Wall	304	Historical, natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Low potential, withdrawal not necessary	Manage vegetation to restore and maintain meadow habitat.
Euphoria Ridge	241	Natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Low potential, withdrawal not necessary	N/A
Hunter Creek Bog	721	Cultural, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to restore and maintain bog habitat
New River	1,135	Historical, cultural, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to restore and maintain meadow and plover habitats
North Fork Chetco	431	Historical, cultural, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Recommend for withdrawal	Manage vegetation (including timber harvest) to promote late-successional structure in younger stands; conduct treatments to control sudden oak death disease
North Fork Coquille River	129	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Low potential, withdrawal not necessary	No timber harvest
North Fork Hunter Creek	1,924	Historical, cultural, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to restore and maintain meadow, oak woodland, shrub, and Jeffery pine habitats
North Spit	709	Cultural, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Withdrawn in 2000	Manage vegetation to restore and maintain wetland and plover habitats
Rocky Peak	1,827	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to restore and maintain meadow habitat

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Roman Nose	52	Natural processes	Limited	Open–No Surface Occupancy	Closed	Low potential, withdrawal not necessary	Manage vegetation to restore and maintain meadow habitat
Rough and Ready	1,189†§	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation for fire resiliency and to maintain natural communities and rare plant habitat
Tioga Creek	41	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Low potential, withdrawal not necessary	No timber harvest
Upper Rock Creek	364	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Low Potential, Closure Not Necessary	Low potential, withdrawal not necessary	No timber harvest
Waldo-Takilma	1,757†	Historical, cultural, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation for fire resiliency and to maintain natural communities and rare plant habitat
Wasson Creek	1,959‡	Fish and wildlife, natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
West Fork Illinois River RNA	1,284‖	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest

* Public motorized access designations include either *closed* or *limited* designations. In ACECs designated as *closed* for public motorized access, all types of public motorized travel will be prohibited anywhere within the area. In ACECs designated as *limited* for public motorized access, public motorized travel activities will be restricted to existing routes and trails. Subsequent implementation-level travel management planning will refine *limited* designations to identify specific routes and trails appropriate for public motorized travel, and will apply restrictions to times/seasons of use and types of vehicles. The New River and North Spit ACECs and the North Spit Addition proposal in Coos Bay have previously had implementation-level travel management planning completed within their boundaries, which has designated specific roads and trails for appropriate public uses.

† The Rough and Ready and Waldo-Takilma ACECs include acres on both the Coos Bay and Medford Districts.

‡ Acres within the Wassen Creek ACEC include BLM-administered lands allocated to the District-Designated Reserve – Lands Managed for their Wilderness Characteristics within the identified lands with wilderness characteristics unit known as Wassen Creek. Due to priority given to the preservation designation of lands allocated to the District-Designated Reserve – Lands Managed for their Wilderness Characteristics, the BLM manages these overlapping lands first for the preservation management needs of the identified lands with wilderness characteristics and second for the special management needs of the ACEC designation.

§ Acres within the Rough and Ready ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the West Fork Illinois River suitable 'scenic' Wild and Scenic River segment. Due to priority given to the protective designation of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection management needs of the suitable Wild and Scenic River segment and second for the special management needs of the ACEC designation.

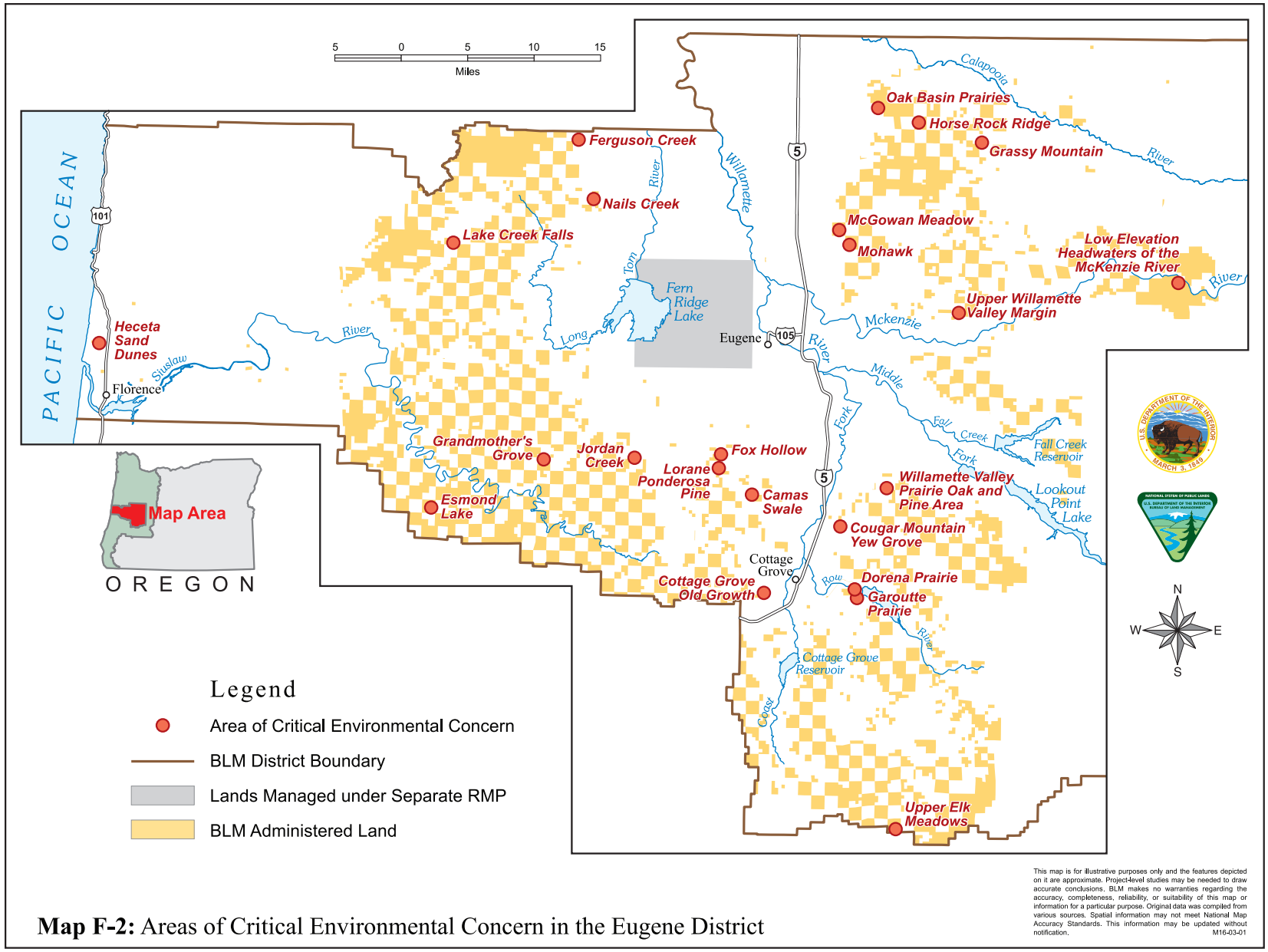
‖ Acres within the West Fork Illinois River RNA ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the West Fork Illinois River suitable 'scenic' Wild and Scenic River segment. Due to priority given to the protective designation of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection management needs of the suitable Wild and Scenic River segment and second for the special management needs of the ACEC designation.

Table F-2. Specific Relevant and Important Values of Designated ACECs within the Coos Bay District within the Northwestern and Coastal Oregon ROD/RMP boundary.

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
Brownson Ridge	--	Marbled murrelet and northern spotted owl	Well-developed Port-Orford-cedar stand with all age classes; potential to fill ONHP cell for Port-Orford-cedar/Douglas-fir forest with dry shrubs/forbs; rare fungi: *Phaeocollybia attenuata*, *P. piceae, P. sipei* and *Sparassis crispa*	--
Cherry Creek RNA	--	Marbled murrelet and northern spotted owl	Mid 1700s birthdate with remnant 445-year-old Douglas-fir; fills (Western hemlock/oxalis; Western hemlock/rhododendron-Oregon grape) fills 3 ONHP cells; contains a rare plant (*Diplophyllum plicatum*) and rare fungi (*Phaeocollybia pseudofestiva*)	--
China Wall	Remnant of historic Brewster Trail; two prehistoric sites, all eligible National Register of Historic Places	Northern spotted owl	Unique plants associated with bald meadows; these meadows accounted for 72% of the botanical diversity of the area; a total of 170 species of vascular plants are documented, including 10 species of trees, 20 species of shrub, 12 species of grasses, sedges and rushes, and 122 species of forbs; Spring Phacelia (*Phacelia verna*) is located in 2 of the 8 meadows	--
Euphoria Ridge	--	Marbled murrelet and northern spotted owl	Old-growth western red cedar stand series rare in Coast Range at this elevation (potential ONHP Coast Range cell)	--
Hunter Creek Bog	--	--	Fills ONHP Coast Range Ecoregion Cell; botany – large, diverse serpentine bog	--
New River	Prehistoric sites	Western snowy plover, northwestern pond turtle, coho and chinook salmon, cutthroat and steelhead trout	Fills two ONHP Coastal lowlands ecological cells; federally endangered western lily (*Lilium occidentale*) and 17 rare species: *Calypogeia sphagnicola* , *Limbella fryei*, *Heterodermia leucomelos*, *Niebla cephalota*, *Ramalina pollinaria* , pink sandverbena (*Abronia umbellata* ssp. *breviflorus*), beach sagewort (*Artemesia pyconocephala*), dwarf brodiaea (*Brodiaea terrestris)*, short-stemmed sedge (*Carex brevicaulis*), timwort (*Cicendia quadrangularis*), coastal cryptantha (*Cryptantha leiocarpa*), russet cotton-grass (*Eriophorum chamissonis*), many-leaved gilia (*Gillia millifoliata*), whorled marsh pennywort (*Hydrocotyle verticillata*), silvery phacelia (*Phacelia argentea*), white beakrush (*Rhynchospora alba*), and humped bladderwort (*Utricularia gibba*)	--
North Fork Chetco	Undisturbed cultural site potentially eligible for addition to the National Register of Historic Places.	Anadromous fish habitat - sea run cutthroat trout; marbled murrelet and northern spotted owl	Fill 2 ONHP Coast Range cells; riparian hardwood forest along a major river 4th order stream segment on coastal stream with California laurel riparian forest in the Klamath Mountains Province	--
North Fork Coquille River	--	High-quality, extremely high-density coho salmon spawning; marbled murrelet and northern spotted owl	Old-growth riparian Douglas-fir/hardwood community on intact 4th order stream.	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
North Fork Hunter Creek	Historic cabin sites/trail; prehistoric sites.	Important spawning and rearing habitat for chinook salmon, steelhead, sea-run and resident cutthroat trout	Fills 4 ONHP cells. Undisturbed old-growth Port-Orford-cedar, and oak/grass savannah; Hairy manzanita (*Arctostaphylos hispidula*); remnant Jeffrey pine (*Pinus jeffreyi*) savannah	--
North Spit	Scenic coastal landscapes comprised of dunes, deflation plain wetlands and Sitka Spruce forest islands. Historic US Lifeguard Service sites and artifacts, and potential prehistoric site.	Western snowy plover, marbled murrelet, northwestern pond turtle, purple martin, Newcomb's littorine snail	Numerous outstanding plant associations and wetlands. Special status plants: *Bryoria pseudocapillaris*, *Byoria spiralifera* , Point Reyes bird's-beak (*Cordylanthes maritimus ssp. palustris), Heterodermia leucomela, Niebla cephalota*. Natural Heritage Marine and Estuarine Special Species Cell, Coast Range Special Species Cell	--
Rocky Peak	Historic trail and lookout sites; panoramic views of coastline plains, foothills, and ocean	Habitat for northern spotted owl, fringed myotis, foothill yellow-legged frog, spotted tail-dropper; documented marbled murrelet	ONHP special species Siskiyou monardella (*Monardella purpurea)*; rare meadow, knob-cone pine plant communities	--
Roman Nose	Sweeping views of forest landscape from highest point in local region	--	Rare example of Oregon Coast Range grassy bald system	--
Rough and Ready	--	--	Ultramafic alluvial deposits and serpentine soil support unique plant community and rare plants including Cook's lomatium (*Lomatium cookii*), large-flowered rush lily (*Hastingsia bracteosa* var. *bracteosa*), Howell's mariposa lily (*Calochortus howellii*), Howell's adder-tongue (*Erythronium howellii*), slender meadowfoam (*Limnanthes gracilis* ssp. *gracilis*); Cook's lomatium critical habitat	--
Tioga Creek	--	High quality stream/riparian conditions and spawning habitat for coho, steelhead, and cutthroat trout; northern spotted owl	400+ year old, old-growth riparian Douglas-fir/hardwood community on 4th order stream with high value as reference site	--
Upper Rock Creek	--	Marbled murrelet and northern spotted owl	Large red cedar dominated forest with sedge dominated wetlands; Fills Western red cedar-western hemlock/skunk cabbage ONHP Coast Range Ecological cell	--
Waldo-Takilma	Intact historic mining sites (National Register of Historic Places)	--	Serpentine plant communities supporting rare plants, Cook's lomatium (*Lomatium cookii*), Howell's mariposa lily (*Calochortus howellii*), clustered lady's-slipper (*Cypripedium fasciculatum*), Howell's adder-tongue (*Erythronium howellii*), slender meadowfoam (*Limnanthes gracilis* ssp. *gracilis*); Cook's lomatium critical habitat	--
Wassen Creek	Scenic: Large block of undisturbed mid-age forest dissected by creek with several waterfalls, plunge pools, and small palustrine lake	Pure strain of native cutthroat trout; northern spotted owl site	Fills ONHP Coast Range Ecoregion Palustrine Wetlands pond at mid to high elevation and 2 ONHP Western Hemlock association cells	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
West Fork Illinois River	--	--	Represents ONAP cells for serpentine fens, western white pine forest, knobcone pine forest, and Jeffrey pine savannah and woodlands; supports rare plants, Howell's mariposa lily (*Calochortus howellii*), Oregon willow-herb *(Epilobium oreganum*), Waldo gentian (*Gentiana setigera*), western bog violet (*Viola primulifolia* ssp. *occidentalis*)	--



Map F-2: Areas of Critical Environmental Concern in the Eugene District

Table F-3. Special Management Needs for Designated Areas of Critical Environmental Concern within the Eugene District in the Northwestern and Coastal Oregon ROD/RMP plan boundary.

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Camas Swale RNA	315	Natural processes	Closed	Open–No Surface Occupancy	Closed	N/A	N/A
Cottage Grove Old Growth	76	Natural processes	Closed	Open–No Surface Occupancy	Closed	Geology not suitable	No timber harvest
Cougar Mountain Yew Grove	9	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Dorena Prairie	10	Natural processes	Limited	Open–No Surface Occupancy	Closed	Previously withdrawn	N/A
Esmond Lake	351	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Geology not suitable	Manage young stands for late-successional forest; preclude harvest in existing late successional stands
Ferguson Creek	23	Natural processes	Closed	Open–No Surface Occupancy	Closed	Geology not suitable	Restoration management for prairie/oak/woodland
Fox Hollow RNA	161	Natural processes	Closed	Open–No Surface Occupancy	Closed	Geology not suitable	Forest management for maintenance and restoration of R&Is
Garoutte Prairie	46	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Previously withdrawn	N/A
Grandmother's Grove	63	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Geology not suitable	Maintain, protect, or restore natural processes or systems; Forest management for maintenance and restoration of R&Is
Grassy Mountain	65	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management to maintain hydrological integrity of meadow/grassland
Heceta Sand Dunes	210	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for restoration management of dunes
Horse Rock Ridge RNA	377	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for maintenance and restoration of R&Is
Jordan Creek	21	Natural processes	Closed	Open–No Surface Occupancy	Closed	Geology not suitable	Forest restoration management for pine/oak/woodland
Lake Creek Falls	54	Cultural, historical, fish and wildlife, natural processes, natural hazards	Limited	Open–No Surface Occupancy	Closed	Geology not suitable	N/A
Lorane Ponderosa Pine	106	Fish and wildlife, natural processes	Closed	Open–No Surface Occupancy	Closed	Geology not suitable	Forest management for maintenance and restoration of R&Is

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Low Elevation Headwaters of the McKenzie River	10,625	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal area originally identified as Marten Bald	Forest management for maintenance and restoration of R&Is
McGowan Meadow	71	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage for meadow habitat.
Mohawk RNA	289	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for maintenance and restoration of R&Is.
Nails Creek	57	Natural processes	Limited	Open–No Surface Occupancy	Closed	Geology not suitable	Forest management for maintenance and restoration of R&Is
Oak Basin Prairies	224	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for maintenance and restoration of R&Is; enhance oak habitats
Upper Elk Meadows RNA	214	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for maintenance and restoration of R&Is
Upper Willamette Valley Margin	5,973†	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for maintenance and restoration of R&Is
Willamette Valley Prairie Oak and Pine Area	1,662	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Forest management for maintenance and restoration of R&Is

* Public motorized access designations include either *closed* or *limited* designations. In ACECs designated as *closed* for public motorized access, all types of public motorized travel will be prohibited anywhere within the area. In ACECs designated as *limited* for public motorized access, public motorized travel activities will be restricted to existing routes and trails. Subsequent implementation-level travel management planning will refine *limited* designations to identify specific routes and trails appropriate for public motorized travel, and will apply restrictions to times/seasons of use and types of vehicles.

† Acres within the Upper Willamette Valley Margin ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the McKenzie River Segment A suitable 'recreational' Wild and Scenic River segment. Due to priority given to the protective designations of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protective management needs of the suitable Wild and Scenic River segment and second for the special management needs of the ACEC designation.

Table F-4. Specific Relevant and Important Values of Designated ACECs within the Eugene District within the Northwestern and Coastal Oregon ROD/RMP boundary.

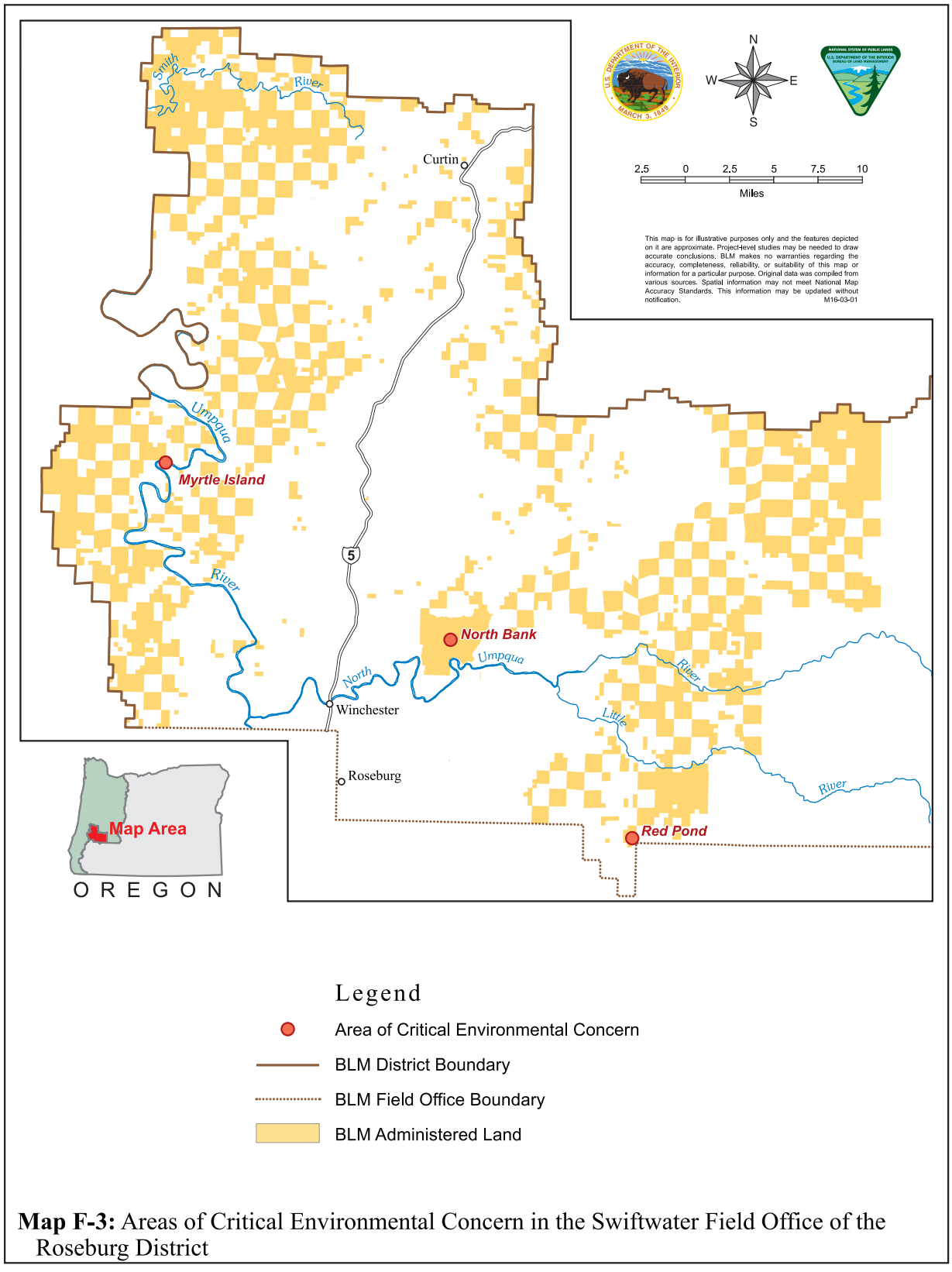
ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
Camas Swale RNA	--	Provides habitat for wildlife species, but does not explicitly list distinct species	The site is an example of a dry-site, mature Douglas-fir forest in the Willamette Valley foothill, includes a small, xeric, meadow community; is included in the ONHP and is the best remaining example found for representing this plant community type in Oregon; it fills the natural heritage cell or element as: Douglas-fir/swordfern and Douglas-fir/Oregon grape forest	--
Cottage Grove Old Growth	--	This site is within the City Creek spotted owl pair home range and contains suitable nesting/roosting/foraging habitat	Douglas-fir old-growth stand; multiple canopy layers represent the late-successional stage of mesic Douglas-fir community with some existing older trees representing ages of 500+ years old	--
Cougar Mountain Yew Grove	--	Good cavity nester habitat	Site represents one of the lowest elevation stands of Pacific Yew remaining in the Willamette Valley; trees contained in this site an unique grove of record yew trees (70–500 years old)	--
Dorena Prairie	--	--	One of the few remaining representative examples of the less than 1% remaining native upland prairie plant community within the Willamette Valley	--
Esmond Lake	Esmond Lake is one of ten lakes in the Coast Range caused by landslides and can only be reached by foot, which has left the lake in an undisturbed state	Coho salmon and steelhead migrate through Esmond Lake and spawn in tributaries above the lake; this lake appears to contain one of the best coho rearing habitats in the Siuslaw Basin on BLM-administered lands	Esmond Lake has an uncommon geologic feature formed by a large deep-seated landslide; spawning counts indicate that coho numbers are increasing in Esmond Creek drainage; *Fissidens fontanus* was thought to be extinct in Oregon until being found in the lake, and remains extant since discovery	--
Ferguson Creek	--	Bureau Special Status wildlife species may benefit from increasing oak woodland habitats; oak trees provide an important mast resource; the current oak habitat is not extensive enough to provide quality habitat	This unit contains one of the only remaining stands of mature oak trees in substantial numbers; however, it is at risk due to the encroachment of Douglas-fir forest resulting from fire suppression	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	**Fish and Wildlife**	**Natural Process or System**	**Natural Hazard**
Fox Hollow RNA	--	--	The site fills the natural area cell or element described in the ONHP as Douglas-fir/swordfern and Douglas-fir/Oregon grape forest; mixed stand of Douglas-fir and ponderosa pine is found on the south slopes and ridge tops, with minor amounts of Oregon white oak and incense-cedar; site is the best remaining example that could be found for representing these plant community types for Oregon	--
Garoutte Prairie	--	--	Relic Willamette Valley prairie plant community currently occupying about 1% of its historic extent; invasive non-native plants are now displacing native plant species	--
Grandmother's Grove	--	--	Low elevation, unmanaged mature and late successional forest providing interior habitat and adjacent mid-seral stands contribute to these values; unique location above the valley floor	--
Grassy Mountain	Highly visible grassy bald	Provides wildlife habitat, but no species explicitly documented	Site fills natural heritage cell or element as Blue wildrye or red fescue grass bald communities; vernal seepage slopes on low-mid elevation rocky bald communities, with monkey flower, saxifrages and moss; one of the finest undisturbed representative examples of a grassy bald on the western margin of the Cascades	--
Heceta Sand Dunes ONA	Scenic dune system; the widest dune sheets along the Oregon Coast; the coastline by Florence (Heceta region) extended outward four times farther than areas to the south; this wider shelf provided abundant fine sand for eolian transport from the south through northward littoral drift	Area potentially supports Bureau Special Status wildlife species including: marbled murrelet, California brown pelican, white-tailed kite, American peregrine falcon, bald eagle, fringed myotis, Oregon plant bug, western bumble bee, horary elfin butterfly, insular blue butterfly	Seashore bluegrass association; red fescue association; shore pine/slough sedge association; shore pine/bearberry association; shore pine/hairy manzanita association; site is identified in the ONHP; several coastal endemic Bureau Special Status Species and the supporting plant communities are now rare along the coast	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
Horse Rock Ridge RNA	Highly visible grassy bald and exemplary with views of the Cascade Mountains	Provides wildlife habitat, but no species explicitly documented	The site fills a natural area cell or element in the Oregon Natural Areas Plan (ONHAC 2010) and is one of the best remaining examples of West Cascades Ecoregion/shrub and Grassland type blue wildrye or Roemer's fescue grass bald communities	--
Jordan Creek	--	Stand contains northern spotted owl dispersal habitat; releasing the oak habitat could run counter to management strategies for the northern spotted owl	Willamette oak woodland; a declining oak habitat; represents just 10% of the original footprint observed pre-1850	--
Lake Creek Falls	Lake Creek Falls is the only waterfall of its size in the Siuslaw Field Office; Numerous cultural and historic points of interest	Species that potentially utilize the habitat or could be viewed from this ACEC: northern spotted owl, marbled murrelet, black swift, bald eagle, purple martin, Oregon red tree vole, Townsend's big-earred bat, fisher, fringed myotis, Cascades axetail slug, Roth's blind ground beetle, western bumble bee, Johnson's hairstreak butterfly	Large natural waterfalls are uncommon on higher order streams and rivers like Lake Creek	Popular swimming area with dangerous rocks/logs often submerged. The algae that creates a slippery rock slide also creates a very unstable walking surface in the stream. Sharp, poorly visible, underwater boulders in pools present hazards to divers. Unstable logs tend to jam up in the pools following winter floods and present hazards to swimmers.
Lorane Ponderosa Pine	--	--	Willamette Valley Ponderosa Pine; This population of ponderosa pine is considered a separate and distinct population from other ponderosa pine populations within Oregon. Decline of *Pinus ponderosa* var. *willamettensis* stands both within the Willamette Valley and on Federal lands, less than 1% remain.	--
Low Elevation Headwaters of the McKenzie River	McKenzie River segment A (11 miles) suitable for inclusion in National Wild and Scenic System as a Recreational Segment	Bull trout, Upper Willamette spring chinook, cutthroat trout, northern spotted owl, tailed frog, Harlequin duck	Unique large continuous block of native forest; Minimally disturbed blocks of land under 2,000 feet on the east side of Willamette Valley	--
McGowan Meadow	Proposed Celebrating Wildflower Site	--	Wet meadow with flora of both the Cascades and Willamette Valley ecoregions	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	**Fish and Wildlife**	**Natural Process or System**	**Natural Hazard**
Mohawk RNA	--	Provides wildlife habitat, but no species explicitly documented; possible habitat for northern spotted owl	Fills a ONAP cell or element as: Douglas-fir/western hemlock/Oregon grape and salal forest; old-growth Douglas-fir and western hemlock within low elevation Willamette Valley foothills; site contains small marsh	--
Nails Creek	--	Northern spotted owl dispersal habitat; releasing the oak habitat could run counter to management strategies for the northern spotted owl	Willamette oak woodland; a declining oak habitat; represents just 10% of the original footprint observed pre-1850	--
Oak Basin Prairies	--	Fender's blue butterfly, Taylor's checkerspot butterfly	Portions of a large upland prairie complex on the west side of the Coburg hills; Kincaid's lupine (*Lupinus sulphureous* ssp. *kincaidii*), Hitchcock's blue-eyed grass	--
Upper Elk Meadows RNA	--	--	Four distinct plant communities: open, wet sedge meadow; wet red alder/willow/hawthorn thickets; open forest dominated by old-growth silver and grand fir; and closed forest dominated by old-growth Douglas-fir; has been selected as a part of an interagency network of sites to be retained and managed primarily for research and educational purposes	--
Upper Willamette Valley Margin	Proximity to large water bodies, McKenzie, Willamette, Row Rivers; Cottage Grove, Dorena, Fall Creek Reservoirs; adjacent to major travel corridors (Interstate 5, Highways 58 and 126) and popular recreation destinations	Contribute to regional population viability and recovery, including a key raptor area and bald eagle habitat areas	Low-elevation, unmanaged mature and late-successional forest providing interior habitat and adjacent mid-seral stands; unique location above the valley floor	--
Willamette Valley Prairie Oak and Pine Area	--	--	Some of the few remaining upland red fescue prairies and oak habitats in the Willamette Valley Province	--

Roseburg-Swiftwater



Map F-3: Areas of Critical Environmental Concern in the Swiftwater Field Office of the Roseburg District

Table F-5. Special Management Needs for Designated Areas of Critical Environmental Concern within the Swiftwater Field Office of the Roseburg District in the Northwestern and Coastal Oregon ROD/RMP plan boundary.

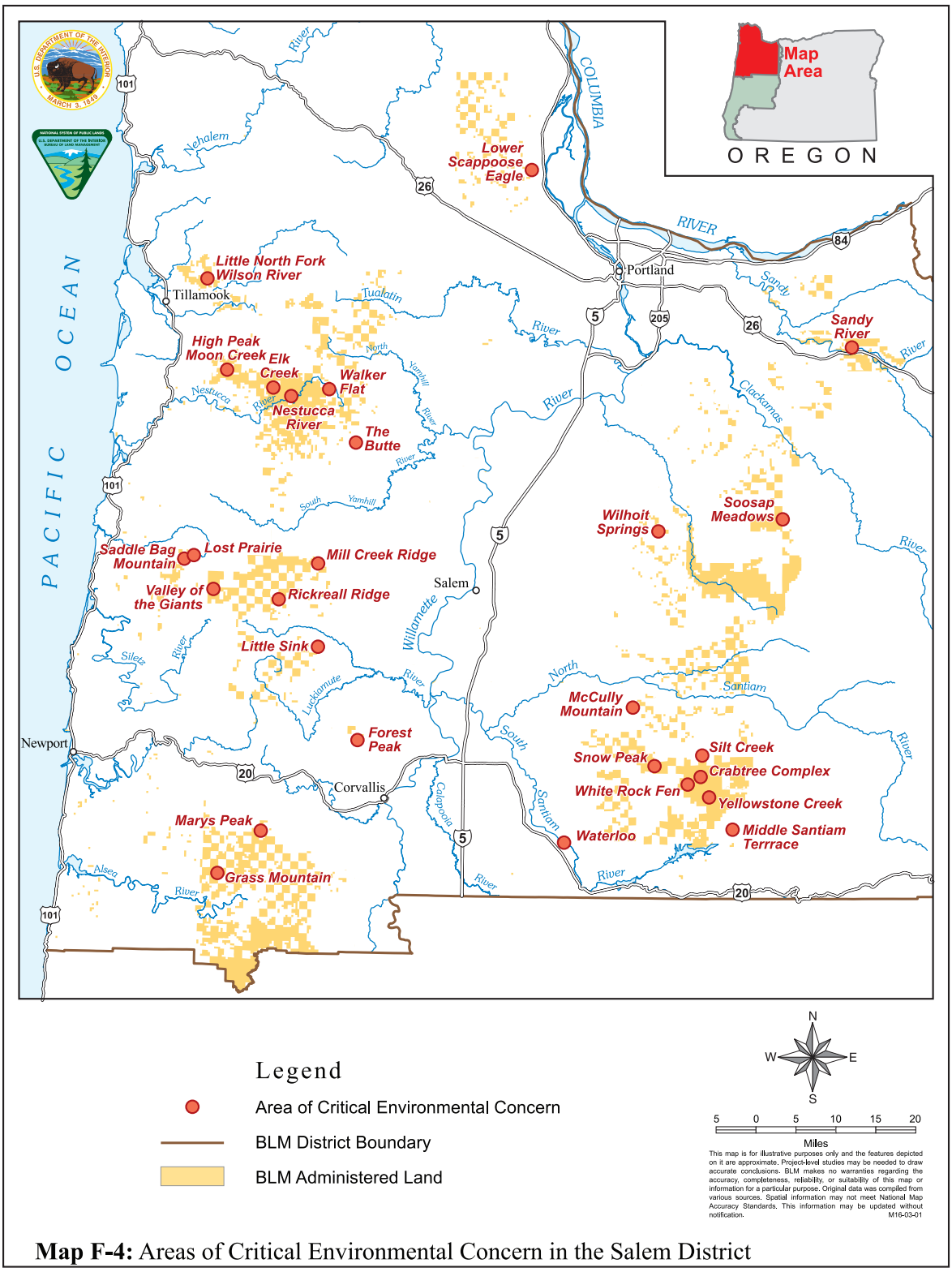
ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Myrtle Island RNA	20	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
North Bank	6,523	Fish and wildlife, natural processes, cultural	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to maintain oak and conifer woodlands according to the North Bank Habitat Management Area/ ACEC Record of Decision, Habitat Management Plan and Monitoring Plan (USDI BLM 2001)
Red Ponds RNA	141	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest

* Public motorized access designations include either *closed* or *limited* designations. In ACECs designated as *closed* for public motorized access, all types of public motorized travel will be prohibited anywhere within the area. In ACECs designated as *limited* for public motorized access, public motorized travel activities will be restricted to existing routes and trails. Subsequent implementation-level travel management planning will refine *limited* designations to identify specific routes and trails appropriate for public motorized travel, and will apply restrictions to times/seasons of use and types of vehicles.

Table F-6. Specific relevant and important values of designated ACECs within the Swiftwater Field Office of the Roseburg District within the Northwestern and Coastal Oregon ROD/RMP boundary.

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
Myrtle Island RNA	--	--	Old-growth stand of California bay laurel and Douglas-fir (riparian hardwood forest along a major river)	--
North Bank	Important cultural site	Columbian white-tailed deer	Koehler's rock cress (*Arabis koehleri* var. *koehleri*), Red-rooted yampah (*Perideridia erythrorhiza*), rough popcorn flower (*Plagiobothrys hirtus*)	--
Red Ponds RNA	--	Northern spotted owl, western pond turtle	Low elevation permanent pond; dotted water-meal (*Wolffia borealis*), *Phaeocollybia californica*	--

Salem



Map F-4: Areas of Critical Environmental Concern in the Salem District

Table F-7. Special Management Needs for Designated Areas of Critical Environmental Concern within the Salem District in the Northwestern and Coastal Oregon ROD/RMP plan boundary.

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Crabtree Complex RNA/ONA	1,251	Scenic, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Consistent with management direction for the LSR and RR, manage vegetation with limited silvicultural treatments of the Outstanding Natural Area to maintain and enhance the scenic quality and native plant communities
Elk Creek	940†	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation with selection harvests and variable retention to promote the development or maintenance of late seral habitat in previously entered stands
Forest Peak RNA	160	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Grass Mountain RNA	1,305	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
High Peak - Moon Creek RNA	1,500	Fish and wildlife, natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Little North Fork Wilson River	1,825	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to promote the development or maintenance of late seral habitat
Little Sink RNA	80	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Lost Prairie	60	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Consistent with management direction for the O&C harvest land base MITA suballocation, design timber harvests with consideration to maintain the R&I values; manage vegetation to maintain and enhance the fen and meadow habitats, rare botanical species occurrences, mixed conifer species, and older forest structure; Management can include projects in young stands to promote the development of old-growth characteristics and to reduce fire hazards
Lower Scappoose Eagle	314	Fish and wildlife	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to maintain or enhance bald eagle habitat; consistent with management direction for the O&C harvest land base MITA suballocation, design timber harvests with consideration to maintain the R&I values

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Mary's Peak ONA	491	Scenic, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to enhance scenic, botanical, and wildlife habitat values
McCully Mountain	102	Scenic, fish and wildlife, natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to maintain meadow and forest edge habitat
Middle Santiam Terrace	206	Cultural, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Consistent with management direction for the O&C harvest land base MITA suballocation, design timber harvests with consideration to maintain the R&I values
Mill Creek Ridge	113	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation primarily to enhance oak and meadow habitats and to maintain botanical, wildlife and natural system values; consistent with management direction for the O&C harvest land base LITA suballocation, design timber harvests with consideration to maintain the R&I values
Nestucca River	1,179‡	Scenic, fish and wildlife	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to maintain and enhance scenic and wildlife values
Rickreall Ridge	604	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Consistent with management direction for the O&C harvest land base LITA suballocation, design timber harvests with consideration to maintain the R&I values; manage vegetation (including timber harvests) to enhance the mosaic of special habitats and plant communities, with emphasis on protecting native plant communities and microclimate around the ridge in the northeastern corner
Saddle Bag Mountain RNA	304	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Sandy River ONA	11,444§	Historical, scenic, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy for most of the ACEC, minerals are owned by non-Federal entities in portions of parcels 14 and 33	Closed for most of the ACEC, minerals are owned by non-Federal entities in portions of parcels 14 and 33	Recommend for withdrawal for most of the ACEC, minerals are owned by non-Federal entities in portions of parcels 14 and 33	Consistent with management direction for the O&C harvest land base MITA and LITA suballocations, design timber harvests with consideration to maintain the R&I values; forest management on the lands acquired with LWCF funding in T. 2 S., R. 5 E., Sections 9–16, that are also in the HLB, will comply with the LWCF Act; manage vegetation to maintain or restore native plant communities through invasive plant treatments and native plantings

ACEC Name	Total Area (Acres)	Relevant and Important Value Category	Public Motorized Access Designation*	Leasable Mineral Entry	Salable Mineral Entry	Locatable Mineral Entry	Vegetation Management
Silt Creek	118	Historical, fish and wildlife, natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest: Active landslide area
Snow Peak	1,186	Historical, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Consistent with management direction for the O&C harvest land base MITA suballocation, design timber harvests with consideration to maintain the R&I values; management for the R&I values will not preclude sustained-yield timber harvest
Soosap Meadows	343	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Consistent with management direction for the O&C harvest land base MITA and LITA suballocations, design timber harvests to maintain existing hydrologic conditions and the natural ecology of the subalpine meadows.
The Butte RNA	41	Natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Valley of the Giants	1,667‖	Scenic, fish and wildlife, natural processes	Limited	BLM does not own sub-surface mineral rights, except for T. 7 S., R. 8 W., Section 31 NE1/4	Closed	Recommend for withdrawal	Consistent with management direction for the O&C harvest land base MITA and LITA suballocations, design timber harvests to not detract from the maintenance of the R&I values; manage vegetation with an emphasis on maintaining and restoring the R&I values
Walker Flat	10	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest: manage vegetation to maintain meadow habitat
Waterloo	8	Natural processes	Closed	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
White Rock Fen	66	Fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Wilhoit Springs	136	Historical, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	No timber harvest
Yellowstone Creek	805#	Scenic, fish and wildlife, natural processes	Limited	Open–No Surface Occupancy	Closed	Recommend for withdrawal	Manage vegetation to promote old growth characteristics and reduce fire hazards

* Public motorized access designations include either *closed* or *limited* designations. In ACECs designated as *closed* for public motorized access, all types of public motorized travel will be prohibited anywhere within the area. In ACECs designated as *limited* for public motorized access, public motorized travel activities will be restricted to existing routes and trails. Subsequent implementation-level travel management planning will refine *limited* designations to identify specific routes and trails appropriate for public motorized travel, and will apply restrictions to times/seasons of use and types of vehicles.

† Acres within the Elk Creek ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the Nestucca River Segment A suitable 'recreational' Wild and Scenic River segment. Due to priority given to the protective designation of lands allocated to the Congressionally Reserved

Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection management needs of the suitable Wild and Scenic River segment and second for the special management needs of the ACEC designation.
‡ Acres within the Nestucca River ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the Nestucca River Segment A suitable 'recreational' Wild and Scenic River segment. Due to priority given to the protective designation of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection management needs of the suitable Wild and Scenic River segment and second for the special management needs of the ACEC designation.
§ Acres within the Sandy River ONA ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the Sandy River designated 'scenic' and 'recreational' Wild and Scenic River segments; within the Sandy River suitable 'recreational' Wild and Scenic River segment; and within the Mt. Hood Corridor congressionally reserved lands. Due to priority given to the protective and preservation designation of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection and preservation management needs of the designated and suitable Wild and Scenic River segments and congressional reservation and second for the special management needs of the ACEC designation.
‖ Acres within the Valley of the Giants ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the North Fork Siletz River suitable 'recreational' Wild and Scenic River segment. Due to priority given to the protective designation of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection management needs of the suitable Wild and Scenic River segment and second for the special management needs of the ACEC designation.
Acres within the Yellowstone Creek ACEC include BLM-administered lands allocated to the Congressionally Reserved Lands and National Conservation Lands within the Quartzville Creek designated 'recreational' Wild and Scenic River. Due to priority given to the protective designation of lands allocated to the Congressionally Reserved Lands and National Conservation Lands, the BLM manages these overlapping lands first for the protection management needs of the designated Wild and Scenic River segment and second for the special management needs of the ACEC designation.

Table F-8. Specific Relevant and Important Values of Designated ACECs within the Salem District within the Northwestern and Coastal Oregon ROD/RMP boundary.

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	**Fish and Wildlife**	**Natural Process or System**	**Natural Hazard**
Crabtree Complex RNA/ONA	Scenic qualities such as forest cover type, complex of habitats and geologic features considered exceptional within the Salem District	Several Bureau Special Status wildlife species and northern spotted owl; cliffs provide unique habitat with potential for raptor use	Relatively undisturbed old-growth forest; fills several West Cascades Ecosystem elements identified in the ONAP; area has a population of Alaska-cedar that is fairly uncommon in this region	--
Elk Creek	--	Inland bald eagle forage and roosting habitat, marbled murrelet, red tree vole; historic nest sites for bald eagle and northern spotted owl; coho and chinook salmon, summer and winter steelhead, sea-run and resident cutthroat trout, Pacific lamprey	Contiguous block of old forest is a rare example of a fully functional natural system in the north Oregon Coast Range as evidenced by the extensive list of late-successional forest-dependent species that occur; area abuts the 360,000-acre 'Tillamook Burn'	--
Forest Peak RNA	--	Undisturbed Willamette Valley margin meadows adjacent to old growth forests; meadow may provide habitat for several at risk butterfly species and declining Willamette valley songbirds, including common nighthawk, Oregon vesper sparrow, western bluebird, and acorn woodpecker	Willamette Valley Ecosystem Elements: Willamette Valley Douglas-fir-bigleaf maple forest with some grand fir; Douglas-fir/poison oak forest; Lemmon's needlegrass-moss bald; represents an intact and natural 3rd order stream system located on the fringes of the Willamette Valley	--
Grass Mountain RNA	Visible from the Willamette Valley and has remnants of the lookout once stationed on the summit; the cement foundation, disposal area, and pieces of metal roofing for the lookout, still remain onsite; in the early 1900s, Grass Mountain was a stopping place for grazing livestock as they were moved between Alsea Valley and Mary's Peak	A high elevation grassy bald habitat juxtaposed with mature noble fir and forest that offers undisturbed refugia for rare and endemic invertebrate species including Roth's blind ground beetle; nesting habitat for northern spotted owl and marbled murrelet	The area represents the Coast Range Ecoregion's Noble fir-western hemlock forest and the Grass bald on Coast Range mountain ecosystem elements; represents a natural 3rd order stream system and old growth conifer habitat	--
High Peak - Moon Creek RNA	--	Large contiguous block of late-successional forest habitat found in north Oregon coast range; relatively inaccessible and undisturbed; potential northern spotted owl and marbled murrelet; provides high quality spawning habitat for anadromous fish, including Oregon coho salmon and steelhead trout	This area is a rare example of a northern Oregon Coast Range old-growth forest with an intact, functioning, late-successional forest system; adjacent to the 'Tillamook Burn'; Coast Range Ecoregion ecosystem elements: Western hemlock/swordfern, Western hemlock/vine maple-salal	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
Little North Fork Wilson River	--	Large contiguous blocks of late-successional forest habitat found in north Oregon coast range; relatively inaccessible and undisturbed; supports substantial salmon populations (Chinook, coho, chum, steelhead, sea run cutthroat)	Intact old-growth conifer riparian habitat is especially rare in coastal ecosystems; relict plant community of 450-year-old Douglas-fir, Sitka spruce, Western hemlock, and Western red cedar	--
Little Sink RNA	--	Provides an excellent example of a low elevation coast range old-growth forest adjacent to the Willamette Valley; northern spotted owls, red tree voles and great blue heron rookery; the ponds are important breeding sites for native amphibians	Fulfills the following Willamette Valley Ecoregion Ecosystem Elements: Douglas-fir – grand fir/vine maple-salal; Slump pond at margin of valley, with aquatic beds and marshy shore; designated Instant Study (wilderness) Area; rare botany species include Dotted water-meal, and lichen *Calicium adspersum*	The past slumping soils or unstable ground at Little Sink has created at least 3 distinct ponds within a coniferous forest habitat
Lost Prairie	--	Supports a large Sphagnum/sedge rich fen and wetland habitat, which supports a diverse assemblage of uncommon invertebrate species; also offers nesting habitat for songbirds, and high quality forage for deer and elk.	Coast Range Ecoregion Ecosystem Element: Mid- to high-elevation sedge and sphagnum fens and a beaver marsh. The most outstanding botanical feature is the presence of a complex of sphagnum species and fen-associated bryophytes and vascular plants. Rare vascular plants include the *Erythronium elegans*, *Fritillaria camschatcensis* and *Anenome oregana* var. *felix;* many uncommon bryophyte species	--
Lower Scappoose Eagle	--	The area includes an active and productive bald eagle communal winter roost site and nest. The consistent, high eagle usage of the area is due to its proximity to Sauvie Island where the eagles forage on the very rich, unique resource of large concentrations of waterfowl	The area is included in the final integrated portfolio within The Nature Conservancy's Pacific Northwest Coast Ecoregional Assessment (Vander Schaff *et al.* 2006)	--
Mary's Peak	The highest mountain in the Oregon Coast Range Mountains north of Coquille; the summit of Mary's Peak has distant views of the Willamette Valley, Oregon Coast Range Mountains and the Cascades	The mature noble-fir forest, high elevation grassy bald, rocky outcrops, wet meadows, seeps, springs, and Douglas-fir old-growth provide a refuge for a minimum of 10 rare or endemic invertebrates including Haddock's rhyacophilan caddisfly and Roth's blind ground beetle; nesting habitat for northern spotted owl and marbled murrelet	Highly diverse assemblage of native plant communities; special habitats or natural values include high-elevation grass meadows, noble fir community, and shallow soils with 'rock garden' plants	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
McCully Mountain	--	Potential for nesting raptors, use by neotropical migratory birds, and occurrence of other wildlife species	Natural system associated with mid-elevation oak meadow and native prairie flora seldom seen along the western slopes of the northern Cascades in Oregon adjacent to the Willamette Valley	--
Middle Santiam Terrace	Includes a Native American cultural site that is one of few in the region on public lands	--	Old-growth fir and hemlock forest at a relatively low elevation river terrace with an increased value for research; represents several native plant community types in the Western hemlock zone in the western slopes of the Cascades	--
Mill Creek Ridge	--	Mill Creek Ridge supports a great diversity of uncommon or endemic invertebrate species, and provide nesting habitat for Willamette Valley songbirds, including common nighthawk, western bluebird, and white-breasted nuthatch	Oregon white oak community located in northwest Oregon on the eastern slopes of the Coast Range Mountains; contains uncommon plant species known from adjacent coniferous forests; many of the species are more common in the Cascades Mountains and from Southern Oregon; several plant species extend the northern range of these species	--
Nestucca River	Designated State scenic waterway and BLM backcountry byway. The Upper Nestucca River is eligible for inclusion in National Wild and Scenic River system (recreational designation); the river corridor is designated VRM I	The Nestucca River corridor includes high quality habitat for bald eagle, northern spotted owl, marbled murrelet, and red tree vole; area is the only known site Oregon Coast Range breeding site for harlequin ducks; also a high quality anadromous fish stream for coho, chinook, summer and winter steelhead, sea-run and resident cutthroat trout	--	--
Rickreall Ridge	--	Rickreall Ridge provides for unique high elevation rocky outcrops and adjoining older forests, which support a diversity of rare or endemic invertebrate species. Western grey squirrels and California ground squirrels common to lower elevations are found at this higher elevation.	A rocky 'hogback' ridge with steep talus slopes, with unique vegetation and is located within the Oregon Coast Range; has a disjunct flora in which the vegetation is similar to vegetation known from the southern Cascades; includes some older forest stands and associated coniferous-forest species; contains many uncommon mesic bryophytes species.	--
Saddle Bag Mountain RNA	--	Old-growth western hemlock supporting mistletoe in the Coast Range provides habitat for Johnson's hairstreak butterflies; potential nesting habitat for northern spotted owl and marbled murrelet.	Old-growth Pacific silver fir and western hemlock community; may be the last remaining mature naturally occurring Pacific silver fir stand in the Oregon Coast Range. Rare botanical species include *Erythronium elegans*, several Bureau Sensitive fungi species, and a collection of uncommon lichen and bryophyte species.	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	Fish and Wildlife	Natural Process or System	Natural Hazard
Sandy River ONA	Cultural: Barlow Road and Rock Corral are National Register sites; prehistoric site eligible for the National Register also exists; Scenic: The inner gorge has steep canyon walls, deep, trench-like pools, waterfalls and cliff-dwelling plant communities; The Mt. Hood corridor (Highway 26) has a VRM I classification and congressionally designated as the Mt. Hood Scenic Corridor	Stocks of Lower Columbia River chinook, winter steelhead, coho and cutthroat trout ; Peregrine falcons, bald eagles, and harlequin ducks have been known to use the Sandy River Gorge, migratory birds such as the willow flycatcher have been documented	Diverse vegetative communities and low elevation old-growth forest ecosystems; riparian old-growth forests in the Middle Sandy are rare in the watershed downstream from Marmot Dam	Precipitous slopes and canyon walls line the inner gorge
Silt Creek	--	--	Active, natural landslide with an old-growth forest and unique habitat related to the slow but continual mass earth movement; host to an abnormally large population of *Pseudocyphellaria rainierensis*.	Large scale, active natural landslide
Snow Peak	--	High quality natural ecosystem supporting considerable biological diversity; northern spotted owl; various migratory bird species	Elevation of 4,280 ft. very close to the Willamette Valley; A variety of special habitats in close proximity, including wet meadows, dry meadows, rock outcrops/crevice habitat, talus slopes, mature to old-growth forests, headwater streams with adjacent riparian and brushy thickets; rare botanical fungi, lichens, and vascular plants, including several Bureau Sensitive species; deer cabbage, a wetland botanical species (*Fauria crista-galli*), found nowhere else in Oregon	--
Soosap Meadows	--	--	These meadows are the only large, undisturbed expanse of natural Cascadian subalpine meadows in the Salem District. Streams that have cut through the glacial moraine have left behind a unique and diverse remnant of subalpine habitat.	--
The Butte RNA	--	--	The area represents the Willamette Valley Douglas-fir-bigleaf maple forest with some grand fir and the Oregon white oak/grass savanna ecosystem elements. It represents an uncommon transitional ecotone involving Willamette Valley margin plant communities and upland Coast Range forested communities.	--

ACEC Name	Relevant and Important Value Category			
	Historic, Cultural, Scenic	**Fish and Wildlife**	**Natural Process or System**	**Natural Hazard**
Valley of the Giants	Educational organizations often visit the area for informal studies; The area also provides for scenic values and excellent opportunities for photography	Nesting habitat for one of the largest concentrations of breeding marbled murrelet in Oregon; northern spotted owls, bald eagles, and Oregon Coastal steelhead trout; invertebrate species closely associated with older forest conditions.	Well-studied remnant old-growth western hemlock plant association and the largest contiguous stand of ancient old-growth forest in the northern Oregon Coast Range (over 800 acres, 400+ years old); rare or uncommon botanical species reported from this location include *Schistostega pennata*, *Filipendula occidentalis*, and *Tetraphis geniculata*	--
Walker Flat	--	--	One of the few natural occurrences of *Sidalcea nelsonia* in the Coast Range	--
Waterloo	--	--	Naturally occurring Ponderosa pine and historically part of a large oak-fir-pine savanna, with prairie located just to the east; is an integral part of a larger system of target conservation areas for the oak-pine-fir habitats	--
White Rock Fen	--	Nesting and foraging potential for neotropical migratory birds and other wildlife species	Four poor fens are unique to the region and are fragile; streams that have cut through the glacial moraine have left behind a unique and diverse remnant of subalpine habitat for botanical, wildlife and aquatic species.	--
Wilhoit Springs	--	--	A rare community with regional significance as an intact low-elevation old-growth conifer forest	--
Yellowstone Creek	The creek contains numerous waterfalls and cascades in a steep, v-shaped canyon surrounded by old-growth forest, lower portions are in the Quartzville Creek Wild and Scenic River; the diversity and old age of the vegetation combined with geologic features creates high intrinsic quality scenery	Northern spotted owl	This tributary to Quartzville Creek is an undisturbed area of low elevation (1,200-3,100 feet), high-quality, contiguous, old growth forest; supports a broad diversity of overstory tree species including Douglas-fir, western hemlock, western redcedar, Pacific yew, Pacific silver-fir, noble fir, western white pine, sugar pine, bigleaf maple, red alder and black cottonwood	--

References

Oregon Natural Heritage Advisory Council (ONHAC). 1981. Revised 1988 and 1993. Oregon Natural Heritage Plan (ONHP). 147 pp. http://orbic.pdx.edu/documents/hplan_1998.pdf.

---. 2012. Oregon Natural Areas Plan (ONAP). Oregon Biodiversity Information Center, Institute for Natural Resources – Portland, Portland State University, Portland, OR. 198 pp. http://orbic.pdx.edu/documents/2010NAP.pdf.

USDI BLM. 2001. North Bank Habitat Management Area/ACEC Record of Decision, Habitat Management Plan and Monitoring Plan. 73 pp. http://www.blm.gov/or/districts/roseburg/plans/files/NBnkACEC.pdf.

Vander Schaaf, D., G. Wilhere, Z. Ferdaña, K. Popper, M. Schindel, P. Skidmore, D. Rolph, P. Iachetti, G. Kittel, R. Crawford, D. Pickering, and J. Christy. 2006. Pacific Northwest Coast Ecoregion Assessment. Prepared by The Nature Conservancy, The Nature Conservancy of Canada, and the Washington Department of Fish and Wildlife. The Nature Conservancy, Portland, OR. 147 pp. http://oregonexplorer.info/data_files/OE_location/northcoast/documents/NorthCoastPDFs/PNW%20Coast%20EA%20Final_Main_Report_Aug21.pdf.

Appendix G – Recreation Management Areas

This appendix provides the lists of Special Recreation Management Areas and Extensive Recreation Management Areas designated under the approved RMP for the Klamath Falls Field Office of the Lakeview District, Medford District, and the South River Field Office of the Roseburg District.

Special Recreation Management Areas (SRMAs) are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation. The BLM manages SRMAs to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation setting characteristics. Within SRMAs, recreation and visitor services management is recognized as the predominant land use plan focus, where specific recreation opportunities and recreation setting characteristics are managed and protected on a long-term basis.

Extensive Recreation Management Areas (ERMAs) are administrative units that require specific management consideration in order to address recreation use, demand, or recreation and visitor services program investments. The BLM manages ERMAs to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMAs is commensurate with the management of other resources and resource uses.

Recreation Management Zones (RMZs) are subdivisions of SRMAs or ERMAs identified in the Recreation Management Area (RMA) Frameworks that further delineate specific recreation opportunities or to ensure recreation and visitor services are managed commensurate with the management of other resources and resource uses.

As part of this RMP, the BLM has designated portions of the landscape as either SRMAs or ERMAs. Within each of these designated areas, the BLM has established recreation and visitor service objectives and identified supporting management actions and allowable uses. The RMA Frameworks are available online at: http://www.blm.gov/or/plans/index.php.

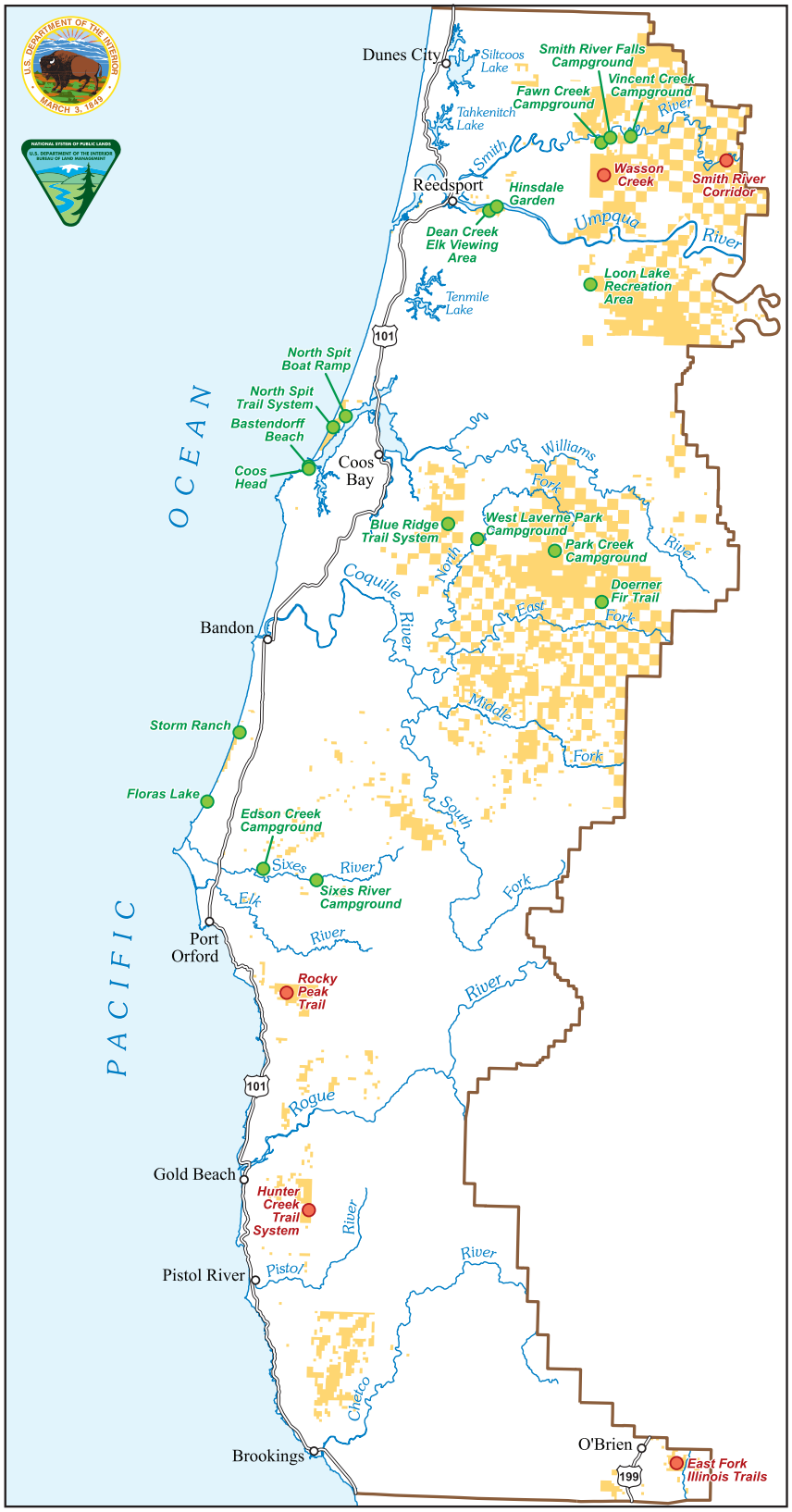
The BLM will update these RMA Frameworks consistent with land use planning regulations that allow for changes to an approved RMP through plan maintenance. The BLM may maintain RMP decisions as necessary to reflect minor changes in data, consistent with 43 CFR 1610.5-4. Plan maintenance is limited to further refining, documenting, or clarifying a previously approved decision. Plan maintenance will not expand the scope of resource uses or restrictions or change the terms, conditions, and decisions of the approved plan. Plan maintenance does not require formal public involvement, interagency coordination, or the NEPA analysis required for making new RMP decisions.

Coos Bay

The Recreation Management Area Frameworks for the Coos Bay District contain descriptions of the recreation values, types of visitors, outcome objectives, Recreation Setting Characteristics, applicable management actions, and allowable use restrictions for the following SRMAs and ERMAs (**Table G-1**).

Table G-1. Recreation Management Areas within the Coos Bay District.

Name	Type	Acres
Bastendorff Beach	SRMA	53
Blue Ridge Trail System	ERMA	1,405
Coos Head	SRMA	54
Dean Creek Elk Viewing Area	SRMA	1,146
Doerner Fir Trail	ERMA	17
East Fork Illinois Trails	ERMA	1,440
Edson Creek Campground	SRMA	45
Fawn Creek Campground	SRMA	3
Floras Lake	ERMA	50
Hinsdale Garden	SRMA	11
Hunter Creek Trail System	ERMA	198
Loon Lake Recreation Area	SRMA	76
North Spit Boat Ramp	SRMA	5
North Spit Trail System	ERMA	1,505
Park Creek Campground	SRMA	4
Rocky Peak Trail	ERMA	1,949
Sixes River Campground	SRMA	27
Smith River Corridor	ERMA	9,505
Smith River Falls Campground	SRMA	4
Storm Ranch	SRMA	236
Vincent Creek Campground	SMRA	4
Wasson Creek	ERMA	5,811
West Laverne Park Campground	SRMA	24



Map G-1: Recreation Management Areas in the Coos Bay District

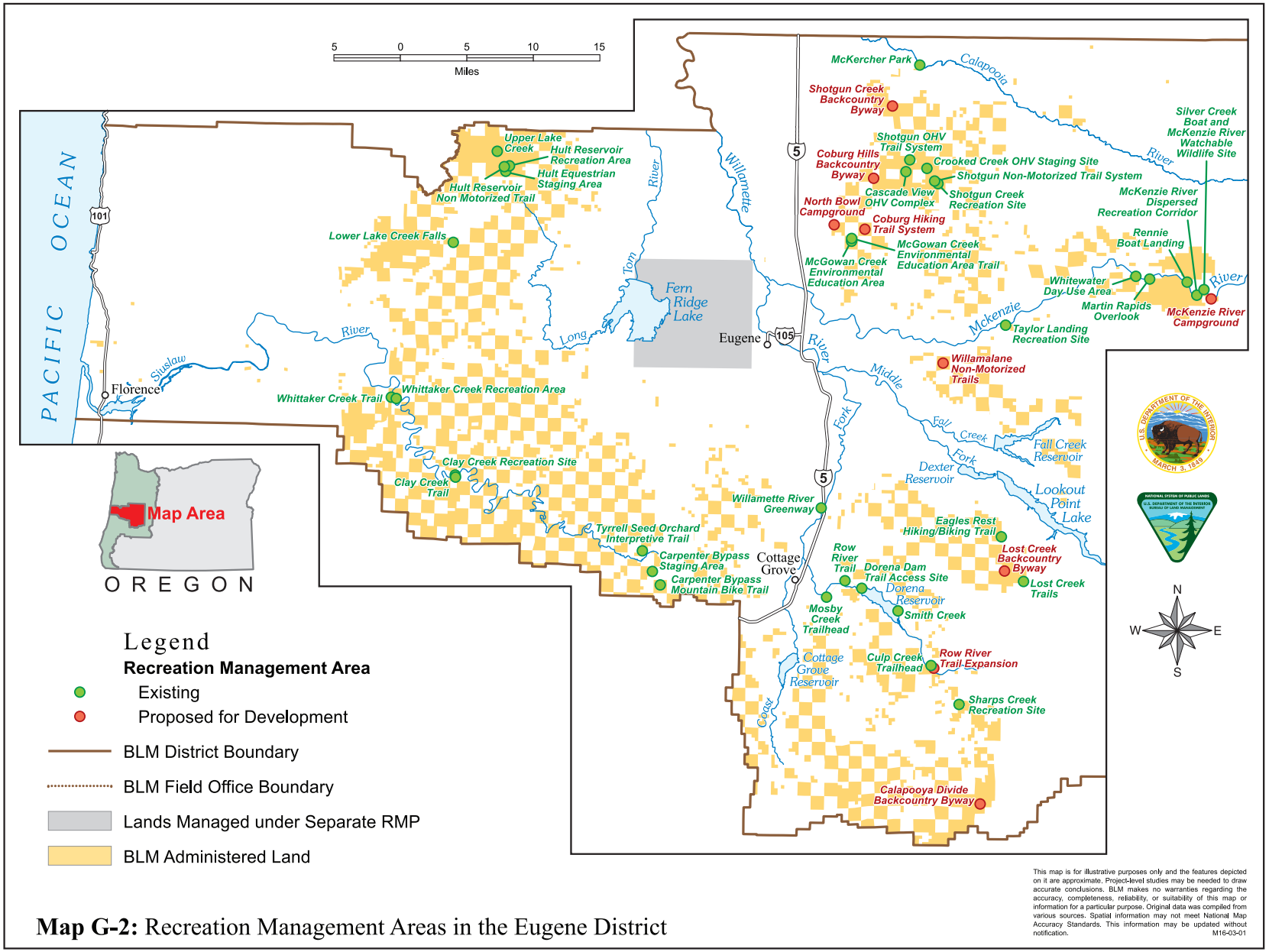
Eugene

The Recreation Management Area Frameworks for the Eugene District contain descriptions of the recreation values, types of visitors, outcome objectives, Recreation Setting Characteristics, applicable management actions, and allowable use restrictions for the following SRMAs and ERMAs (**Table G-2**).

Table G-2. Recreation Management Areas within the Eugene District.

Name	Type	Acres
Calapooya Divide Backcountry Byway	ERMA	225
Carpenter Bypass Mountain Bike Trail	ERMA	1,160
Carpenter Bypass Staging Area	SRMA	1
Cascade View OHV Complex	SRMA	6
Clay Creek Recreation Site	SRMA	10
Clay Creek Trail	ERMA	14
Coburg Hiking Trail System	ERMA	1,940
Coburg Hills Backcountry Byway	ERMA	79
Crooked Creek OHV Staging Site	SRMA	1
Culp Creek Trailhead	SRMA	< 1
Dorena Dam Trail Access Site	SRMA	1
Eagles Rest Hiking/Biking Trail	ERMA	3
Hult Equestrian Staging Area	SRMA	1
Hult Reservoir Non-motorized Trail	ERMA	213
Hult Reservoir Recreation Area	SRMA	21
Lost Creek Backcountry Byway	ERMA	144
Lost Creek Trails	ERMA	20
Lower Lake Creek Falls	SRMA	2
Martin Rapids Overlook	SRMA	3
McGowan Creek Environmental Education Area	SRMA	1
McGowan Creek Environmental Education Area Trail	ERMA	91
McKenzie River Campground	SRMA	146
McKenzie River Dispersed Recreation Corridor	ERMA	276
McKercher Park	SRMA	< 1
Mosby Creek Trailhead	SRMA	10
North Bowl Campground	ERMA	83
Rennie Boat Landing	SRMA	< 1
Row River Trail	ERMA	67
Row River Trail Expansion	ERMA	2
Sharps Creek Recreation Site	SRMA	3
Shotgun Creek Backcountry Byway	ERMA	169
Shotgun Creek Recreation Site	SRMA	16
Shotgun Non-Motorized Trail System	ERMA	64
Shotgun OHV Trail System	ERMA	5,753
Silver Creek Boat and McKenzie River Watchable Wildlife Site	SRMA	1
Smith Creek	SRMA	1
Taylor Landing Recreation Site	SRMA	3

Name	Type	Acres
Tyrrell Seed Orchard Interpretive Trail	ERMA	8
Upper Lake Creek	ERMA	12,486
Whitewater Day Use Area	SRMA	6
Whittaker Creek Recreation Area	SRMA	2
Whittaker Creek Trail	ERMA	13
Willamalane Non-Motorized Trails	ERMA	1,058
Willamette River Greenway	SRMA	4



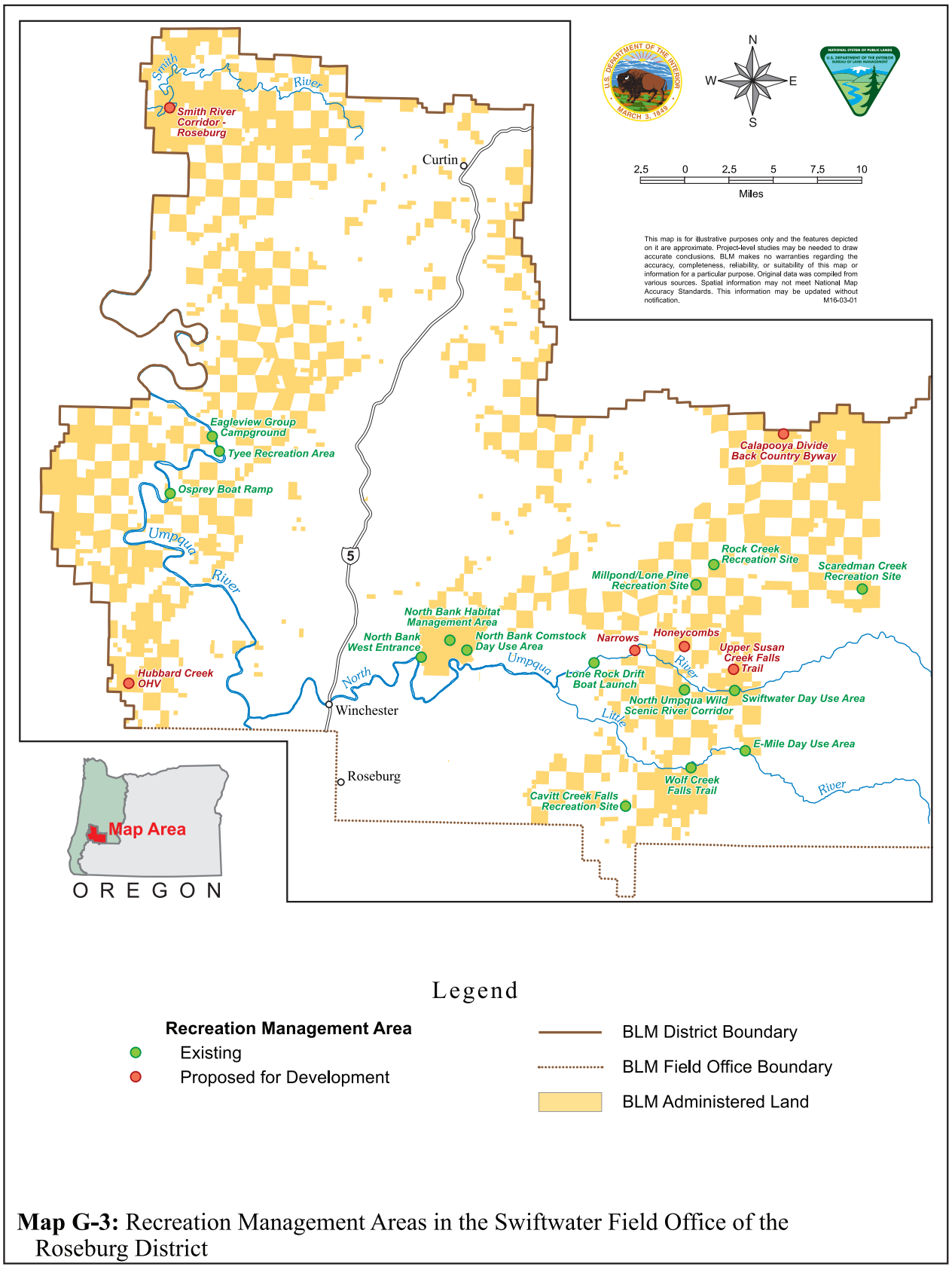
Map G-2: Recreation Management Areas in the Eugene District

Roseburg – Swiftwater

The Recreation Management Area Frameworks for the Swiftwater Field Office of the Roseburg District contain descriptions of the recreation values, types of visitors, outcome objectives, Recreation Setting Characteristics, applicable management actions, and allowable use restrictions for the following SRMAs and ERMAs (**Table G-3**).

Table G-3. Recreation Management Areas within the Swiftwater Field Office of the Roseburg District.

Name	Type	Acres
Calapooya Divide Backcountry Byway	ERMA	44
Cavitt Creek Falls Recreation Site	SRMA	16
Eagleview Group Campground	SRMA	12
E-Mile Day-Use Area	SRMA	5
Honeycombs	ERMA	4
Hubbard Creek OHV	ERMA	11,583
Lone Rock Drift Boat Launch	SRMA	1
Millpond/Lone Pine Recreation Site	SRMA	52
Narrows	ERMA	16
North Bank-Comstock Day Use Area	SRMA	2
North Bank-West Entrance	SRMA	2
North Bank Habitat Management Area	ERMA	6,523
North Umpqua Wild Scenic River Corridor	SRMA	2,222
Osprey Boat Ramp	SRMA	3
Rock Creek Recreation Site	SRMA	22
Scaredman Recreation Site	SRMA	10
Smith River Corridor-Roseburg	ERMA	140
Swiftwater Day-Use Area	SRMA	4
Tyee Recreation Area	SRMA	14
Upper Susan Creek Falls Trail	ERMA	53
Wolf Creek Falls Trail	SRMA	16



Map G-3: Recreation Management Areas in the Swiftwater Field Office of the Roseburg District

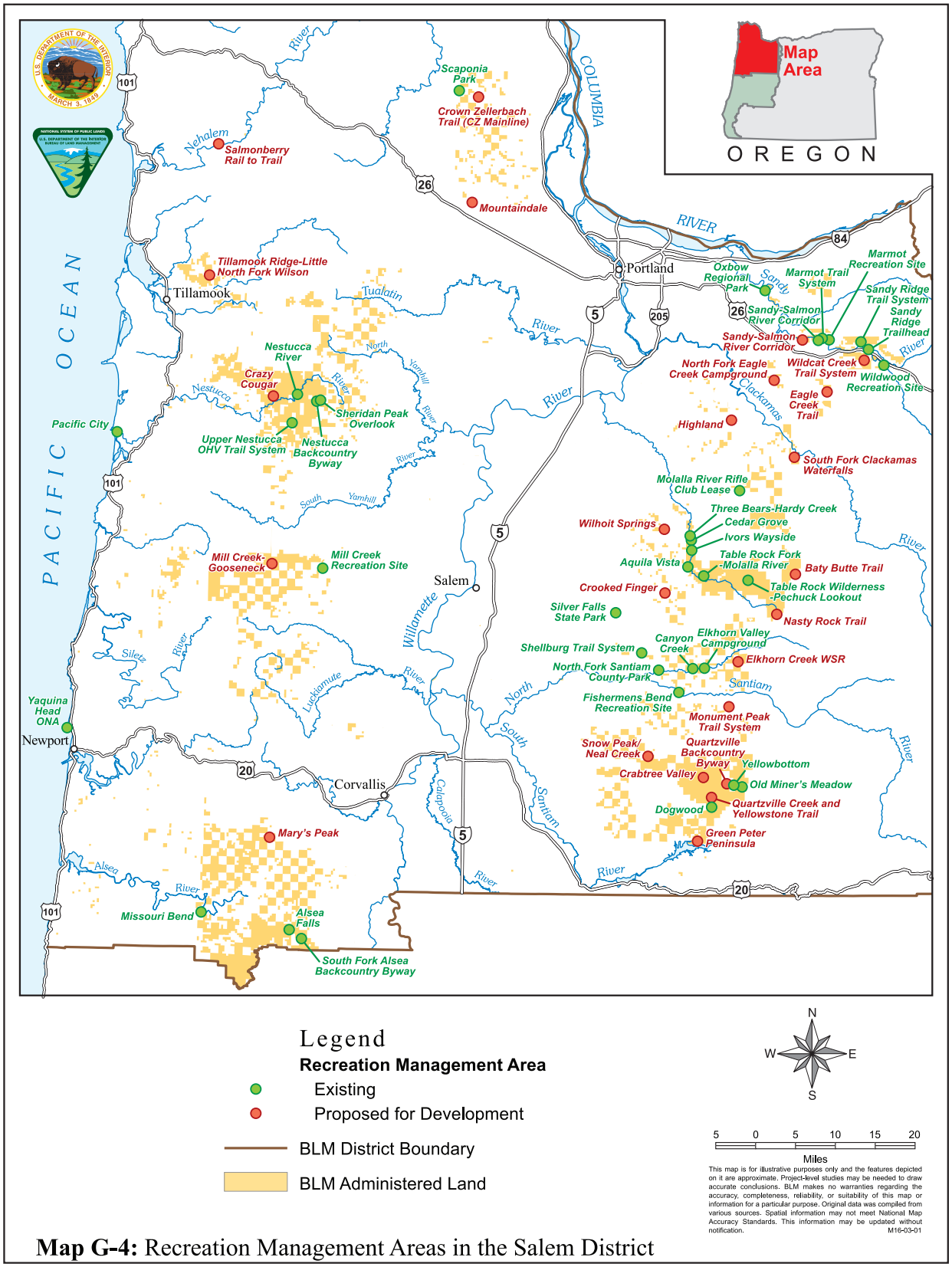
Salem

The Recreation Management Area Frameworks for the Salem District contain descriptions of the recreation values, types of visitors, outcome objectives, Recreation Setting Characteristics, applicable management actions, and allowable use restrictions for the following SRMAs and ERMAs (**Table G-4**).

Table G-4. Recreation Management Areas within the Salem District.

Name	Type	Acres
Alsea Falls	SRMA	3,226
Aquila Vista	SRMA	178
Baty Butte Trail	ERMA	551
Canyon Creek	SRMA	13
Cedar Grove	SRMA	5
Crabtree Valley	ERMA	584
Crazy Cougar	ERMA	1,312
Crooked Finger	ERMA	451
Crown Zellerbach Trail (CZ Mainline)	ERMA	23
Dogwood	SRMA	6
Eagle Creek Trail	ERMA	160
Elkhorn Creek WSR	ERMA	1,103
Elkhorn Valley Campground	SRMA	78
Fishermen's Bend Recreation Site	SRMA	184
Green Peter Peninsula	ERMA	2,054
Highland	ERMA	844
Ivors Wayside	SRMA	2
Marmot Recreation Site	SRMA	92
Marmot Trail System	ERMA	530
Mary's Peak	ERMA	3,759
Mill Creek-Gooseneck	ERMA	7,300
Mill Creek Recreation Site	SRMA	469
Missouri Bend	SRMA	3
Molalla River Rifle Club Lease	ERMA	40
Monument Peak Trail System	ERMA	909
Mountaindale	ERMA	199
Nasty Rock Trail	ERMA	135
Nestucca Backcountry Byway	ERMA	203
Nestucca River	SRMA	134
North Fork Eagle Creek Campground	SRMA	68
North Fork Santiam County Park	SRMA	12
Old Miner's Meadow	SRMA	3
Oxbow Regional Park	SRMA	260
Pacific City	ERMA	63
Quartzville Backcountry Byway	ERMA	72
Quartzville Creek and Yellowstone Trail	ERMA	2,689

Name	Type	Acres
Salmonberry Rail to Trail	ERMA	14
Sandy-Salmon River Corridor	ERMA	2,187
Sandy Ridge Trail System	SRMA	3,802
Sandy Ridge Trailhead	SRMA	52
Scaponia Park	SRMA	8
Shellburg Trail System	ERMA	283
Sheridan Peak Overlook	SRMA	3
Silver Falls State Park	SRMA	237
Snow Peak/Neal Creek	ERMA	6,757
South Fork Alsea Backcountry Byway	ERMA	88
South Fork Clackamas Waterfalls	ERMA	1,116
Table Rock Fork – Molalla River	ERMA	19,353
Table Rock Wilderness-Pechuck Lookout	ERMA	6,171
Tillamook Ridge-Little North Fork Wilson	ERMA	5,745
Three Bears-Hardy Creek	SRMA	14
Upper Nestucca OHV Trail System	ERMA	7,633
Wildcat Creek Trail System	SRMA	2,444
Wildwood Recreation Site	SRMA	553
Wilhoit Springs	ERMA	561
Yaquina Head ONA	SRMA	91
Yellowbottom	SRMA	13



Map G-4: Recreation Management Areas in the Salem District

Appendix H – Public Motorized Access

This appendix outlines the decision-making process that the BLM will use to develop the initial transportation network, provides the basis for future management decisions, and sets guidelines for making transportation network adjustments through the life of this RMP. The BLM has developed these management guidelines consistent with BLM Manual H-8342 – Travel and Transportation Handbook (USDI BLM 2012). The BLM will apply these guidelines consistently across the decision area for the broad-level land use plan designations, with specific guidelines at the district level for designations that contain travel management opportunities (i.e., Class I, II, III, and IV motorized, mechanized, pedestrian, and equestrian travel).

Implementation-Level Travel Management Planning

Implementation-level travel management planning is the process of establishing a final travel network that includes route-specific designations within the broader land use planning level designations for public motorized access. The BLM has deferred implementation-level travel management planning. The land use planning level designations of areas for public motorized access do not apply to non-motorized uses (e.g., hiking, biking, horseback riding). In the designations of specific travel routes for public motorized access through implementation-level travel management planning, the BLM will consider the needs for a variety of road and trail systems tailored to a variety of users including non-motorized recreational uses.

Implementation-Level Travel Management Planning Guidance

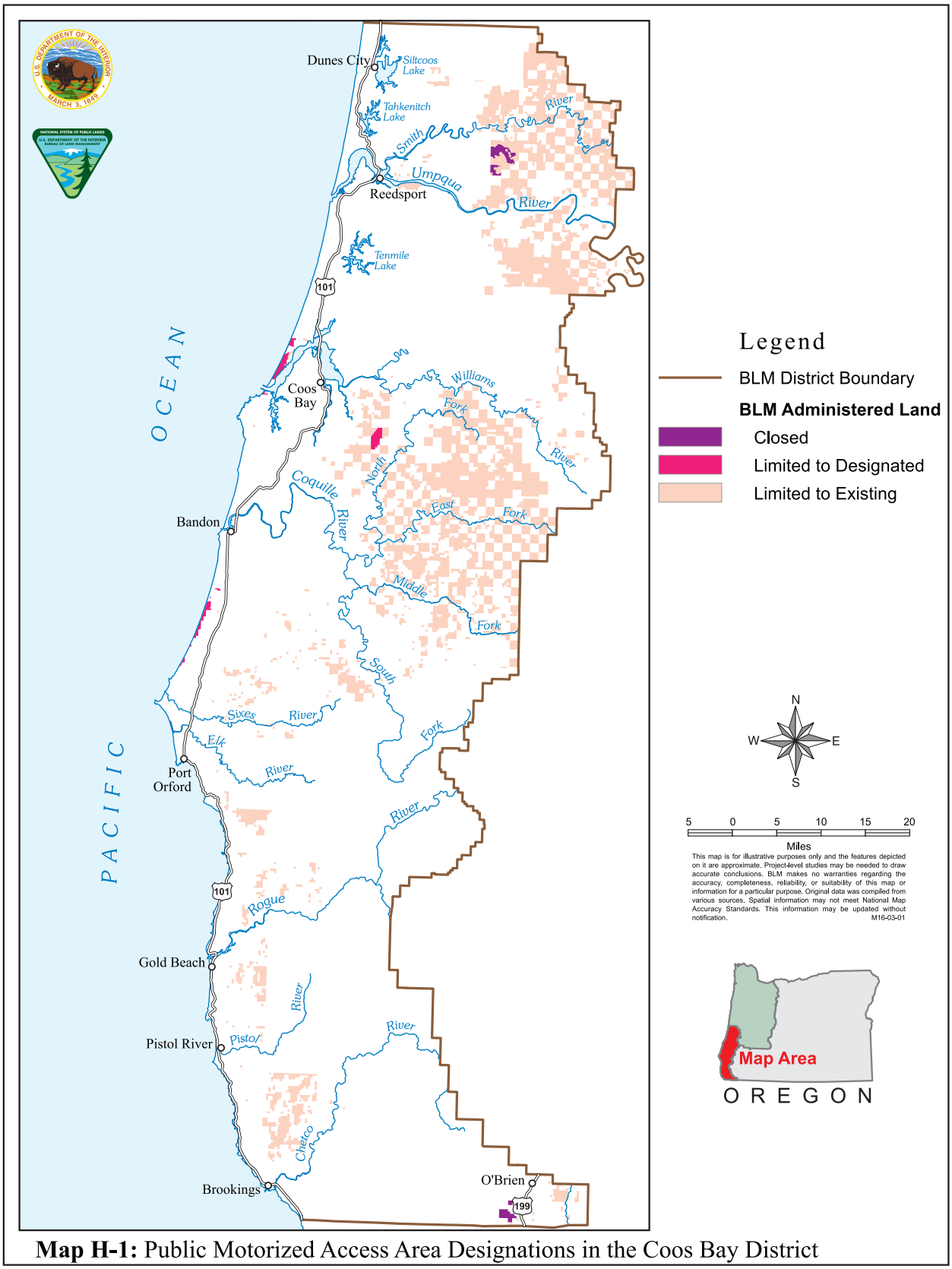
Through the land use planning process, the BLM designated areas as *limited*[56] or *closed* for public motorized access (**Map H-1** to **Map H-4**).[57] Criteria for *limited* and *closed* are designations are established in 43 CFR 8340.0–5 (f, g, h). The designations for public motorized access are defined as:

- ***Limited***– Areas where the BLM has restricted public motorized travel activities in order to meet recreational and resource management objectives[58]
- ***Closed***– Areas that the BLM has closed to all public motorized vehicle activities to protect resources, ensure visitor safety, or reduce visitor conflicts

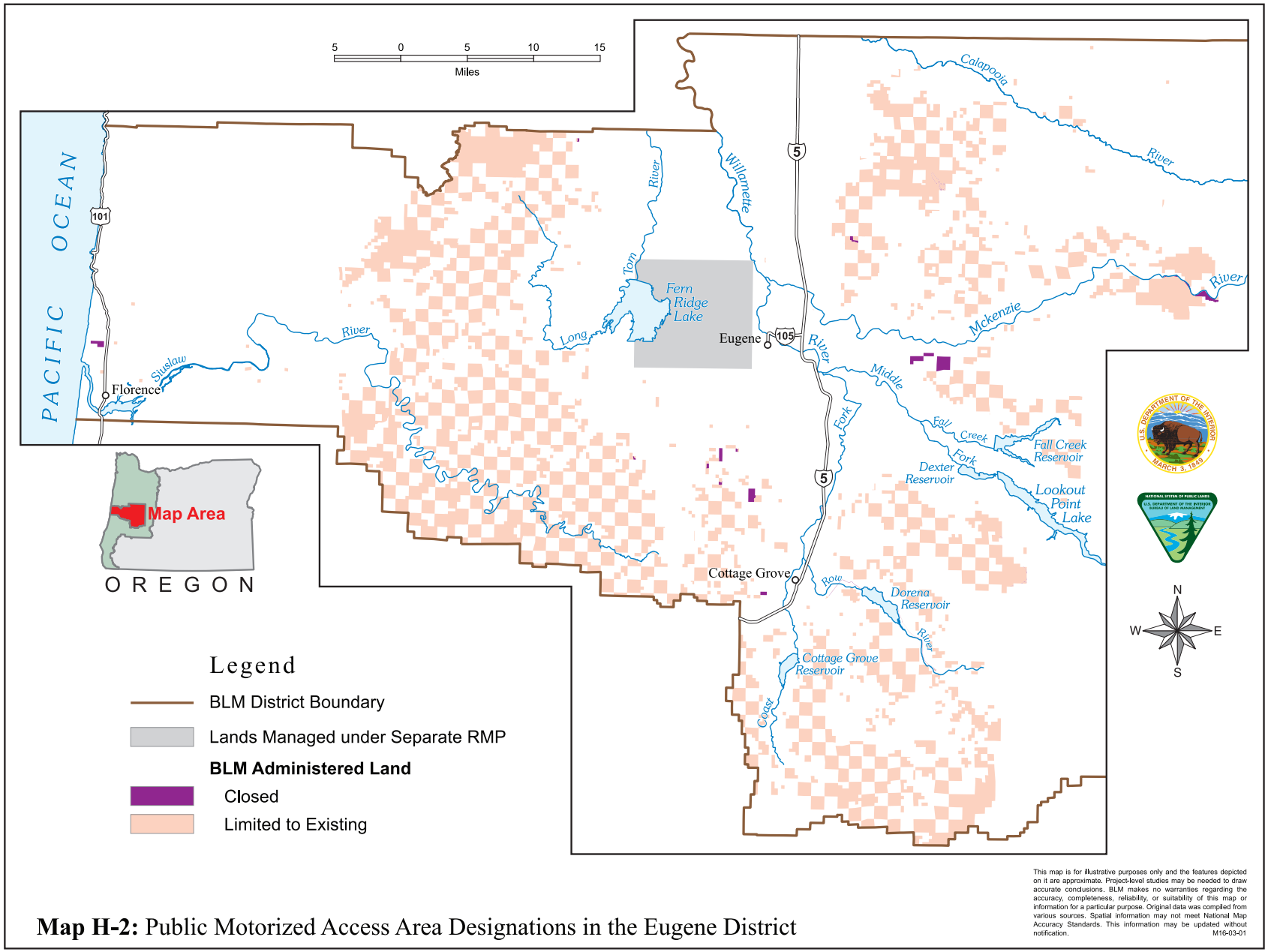
[56] Designation of areas as *limited*, and as displayed in maps in **Maps H-1** through **H-4**, does not indicate legal public access is secured for individual travel routes within the decision area. The BLM will address legal public access on specific travel routes through implementation-level travel management planning.

[57] The designations in the approved RMP of areas as *limited* or *closed* for public motorized access are transportation land use plan decisions and not implementation decisions. Land use plan decisions guide future land management actions and provide guidance for subsequent site-specific implementation decisions. Designations of areas as *limited* or *closed* for public motorized access will guide use within these areas until the BLM completes implementation-level travel management planning. (USDI BLM H-8342 – Travel and Transportation Handbook 2012).

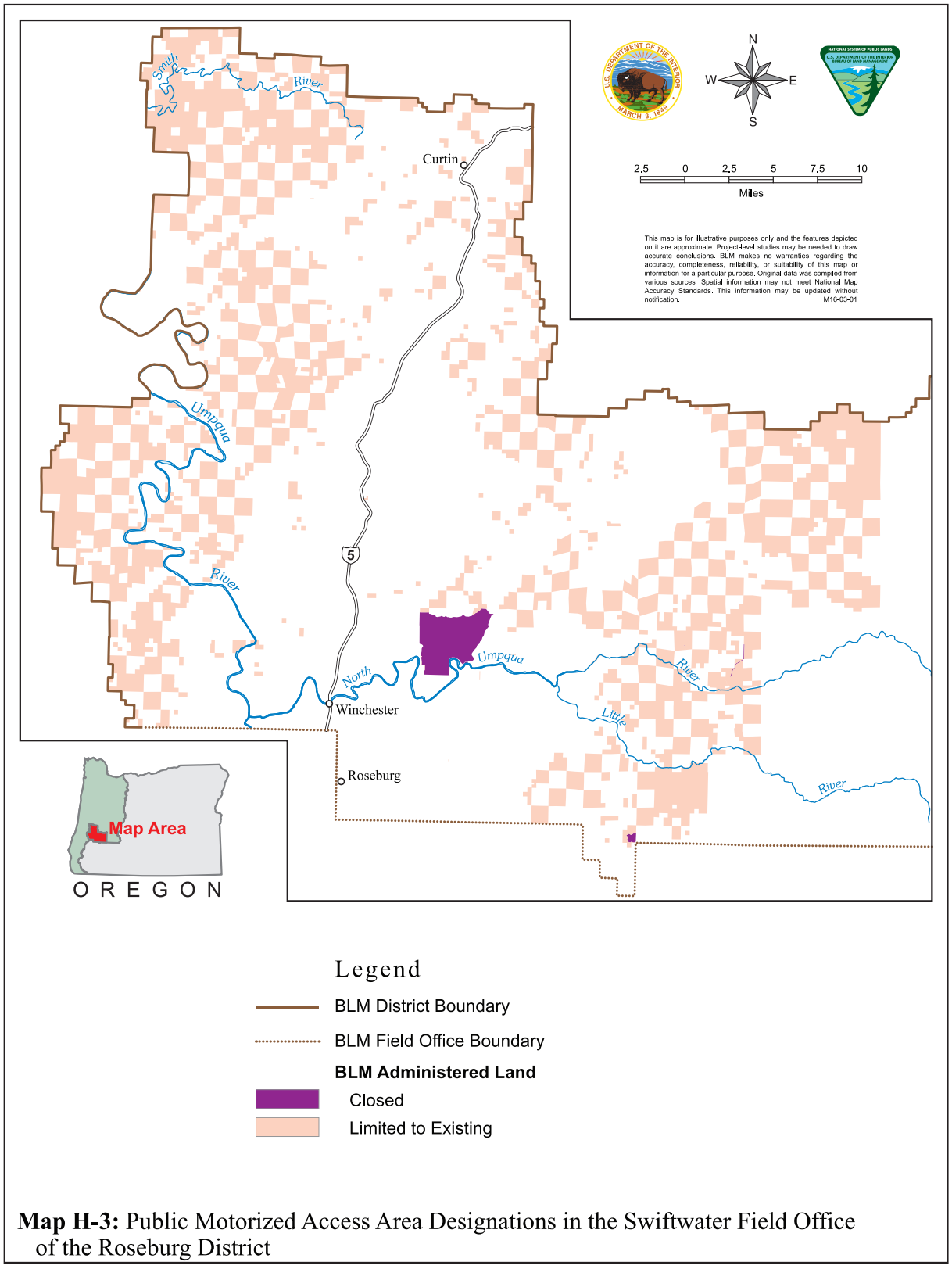
[58] Restrictions may include the number or types of vehicles, the time or season of use, permitted or licensed use only, or limiting use to existing or designated roads and trails.



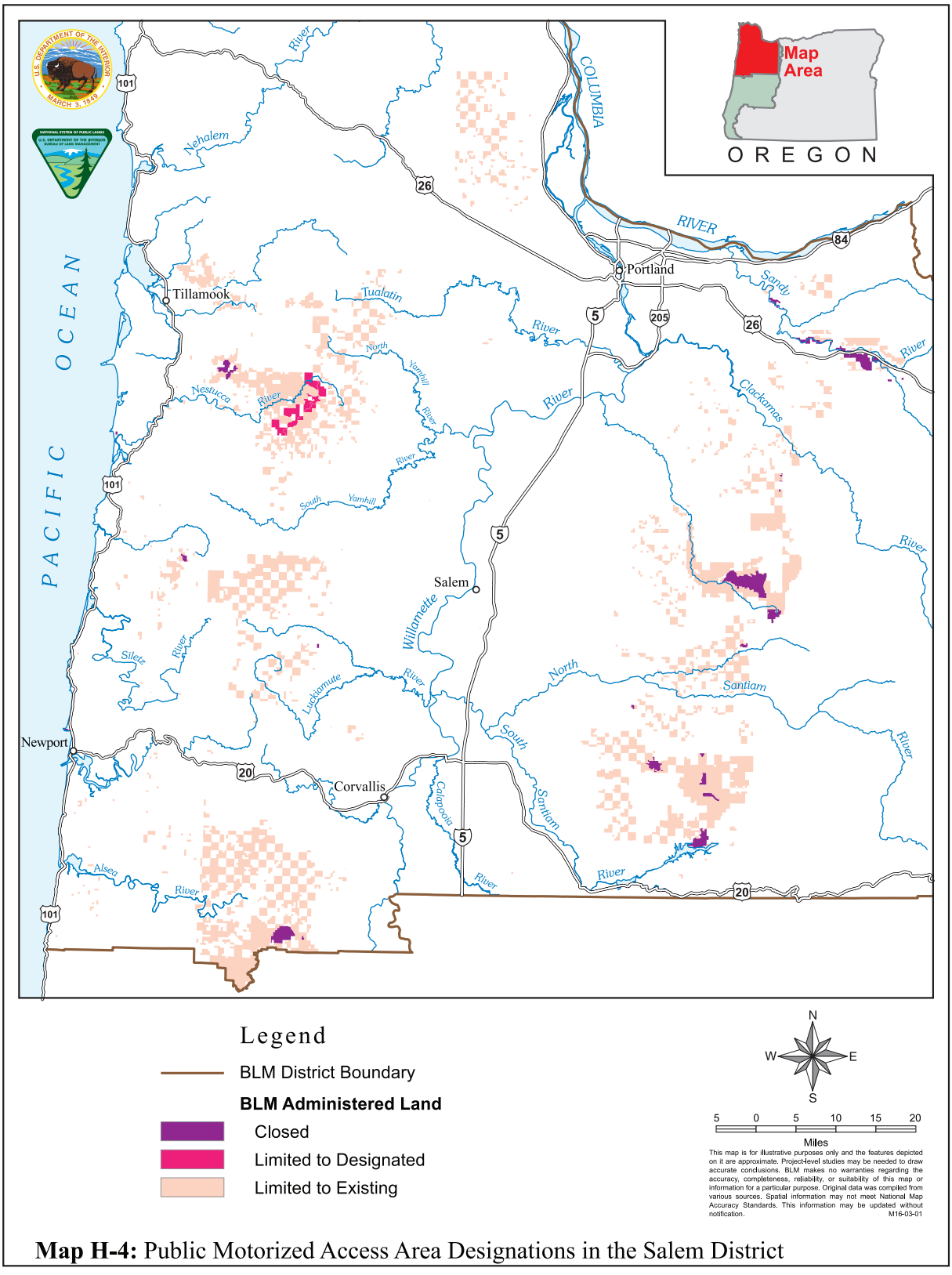
Map H-1: Public Motorized Access Area Designations in the Coos Bay District



Map H-2: Public Motorized Access Area Designations in the Eugene District



Map H-3: Public Motorized Access Area Designations in the Swiftwater Field Office of the Roseburg District



Map H-4: Public Motorized Access Area Designations in the Salem District

The designations defined above require an additional level of effort and planning prior to implementation. These types of decisions require site-specific planning and analysis. The implementation-level travel management planning will be conducted using an interdisciplinary team approach to address all resource uses, including administrative, recreation, commercial and associated modes of travel (motorized, mechanized and non-motorized types).

Implementation-level travel management planning will delineate route-specific decisions to support RMP management objectives and management direction, and the designation criteria in 43 CFR 8342.1. In addition:

- Public-land roads or trails determined to cause considerable adverse effects or to continue a nuisance or threat to public safety for relocation or closure and rehabilitation after appropriate coordination with applicable agencies and partners.
- Routes that are duplicative, parallel, or redundant will be considered for closure and parallel roads will be eliminated where travelling to the same destination when the destination can be accessed from the same direction and topography and user experience.
- All routes will undergo a route evaluation to determine its purpose and need and the potential resource or user conflicts from motorized travel. Where resource or user conflicts outweigh the purpose and need for the route, the route will be considered for closure or considered for relocation outside of sensitive habitat.
- Routes that do not have a purpose and need will be considered for closure.
- Over snow vehicles designed for use over snow and that run on tracks or skis will be limited to designated routes or considered for seasonal closures on routes in sensitive areas.
- Routes not required for public access or recreation with a current administrative/agency purpose or need will be evaluated for administrative access only.
- Prioritize restoration of routes not designated in a Travel Management Plan.
- Use seed mixes or transplant techniques that will maintain or enhance habitat when rehabilitating linear disturbances.
- Temporary closures will be considered in accordance with 43 CFR 8364 (Closures and Restrictions); 43 CFR 8351 (Designated National Areas); 43 CFR 6302 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR 8341 (Conditions of Use). Temporary closure or restriction orders under these authorities are enacted at the discretion of the authorized officer to resolve management conflicts and protect persons, property, and public lands and resources. Where an authorized officer determines that off-highway vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2). A closure or restriction order shall be considered only after other management strategies and alternatives have been explored. The duration of temporary closure or restriction orders shall be limited to 24 months or less; however, certain situations may require longer closures or iterative temporary closures. This may include closure of routes or areas.

When developing implementation-level travel management plans, the BLM will consider the following when determining the compatibility of different types of public travel opportunities:

- Other resource values and uses
- Primary travelers
- Emerging uses such as growing recreational-use types
- Setting characteristics that are to be maintained, including recreation setting characteristics and VRM settings
- Primary means of travel allowed to accomplish the objectives and to maintain the setting characteristics
- Social conflicts between different travel types
- Social conflicts between public land visitors and adjacent property owners
- Number and types of access points
- Existing right-of-ways and future right-of-way requests
- Existing geographic identify and public knowledge of the area
- Identifiable boundaries of the Travel Management Area based on topography, major roads, or other easily discernible elements

The implementation-level travel management planning process includes development of a public outreach strategy. Consultation with interested user groups, Federal, State, county and local agencies, local landowners, and other parties will be done in a manner that provides an opportunity for the public to express itself and have its views given consideration. A public outreach strategy to engage fully all interested stakeholders will be incorporated into future travel management plans.

Implementation-level travel management plans will include or address the following:

- Criteria to select or reject specific transportation linear features in the final travel management network; to add new roads, primitive roads or trails; and to specify limitations. The criteria must include those identified in 43 CFR 8342.1.
- A map of roads, primitive roads, and trails for all travel modes and uses, including motorized, non-motorized, and mechanized travel.
- Definitions and additional limitations for specific roads, primitive roads, and trails
- Guidelines for managing and maintaining the travel management system. This includes, at a minimum, the development of route-specific management objectives for roads, primitive roads, and trail management objectives; a sign plan and education/public information plan; an enforcement plan, and a process requiring the application of engineering best management practices.
- Indicators to guide plan maintenance, amendments, or revisions related to the travel management network.
- Needed easements and rights-of-way to maintain the existing road, primitive road, and trail network providing public land access.
- Provisions for new route construction or adaptation or relocation of existing routes.
- A plan for decommissioning and rehabilitating closed or unauthorized routes.
- A monitoring plan.
- Classification of all roads, primitive roads, and trails, designated for travel in an implementation-level travel management plan as assets in the Facility Asset Management

System. All roads, primitive roads, and trails will also be identified as such in the Ground Transportation Linear Feature geospatial database.

Existing Motorized and Non-Motorized Trails

The BLM is currently working on an inventory of all user-created motorized and non-motorized routes within the decision area. The BLM will use this inventory as a baseline to guide future route designations through implementation-level travel management planning within the areas designated as *limited* or *closed* to public motorized access.

Recreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation. **Table H-1** displays the current authorized trails within the decision area.

Table H-1. Current authorized motorized and non-motorized trails within the decision area.

District/Field Office	Recreation Trail	Miles
Coos Bay	Blue Ridge	10.0
	Doerner Fir	0.5
	Euphoria Ridge OHV Trail System	4.0
	Floras Lake	1.0
	Four Mile Creek	0.3
	Loon Lake Waterfall	0.5
	Lost Lake	1.0
	New River/Storm Ranch	2.0
	New River Water Trails	5.0
	New Fork Hunter Creek	2.0
	North Spit Trail System	9.0
	Subtotal	**35.3**
Eugene	Clay Creek Trail	0.6
	Eagles Rest Trail	0.2
	Lake Creek Falls Trail	0.2
	Row River Trail	13.5
	Shotgun Creek Non-Motorized Trails	6.2
	Shotgun Creek OHV Trail System	23.2
	Tyrrell Forest Succession Trail	1.0
	Whittaker Creek Trail	1.0
	Subtotal	**45.9**
Roseburg	Emerald Trail	1.3
	North Bank Ranch Trail System	8.0
	North Umpqua Trail	12.3
	Sawmill Trail	12.3
	Susan Creek Trails	2.0
	Susan Creek Falls Trails	1.0
	Wolf Creek Falls Trails	1.2
	Subtotal	**38.1**
Salem	Alsea Falls Trail System	8.0
	Baty Butte-Silver King Trail	3.4
	Boulder Ridge Trail	0.2
	Eagle Creek Trail	0.5
	McIntyre Ridge Trail	0.5
	Molalla River Trail System	24.6
	Nasty Rock Trail	1.0
	Sandy Ridge Trail System	15.4
	Table Rock Wilderness Trails	20.4
	Upper Nestucca OHV Trail System	25.0
	Valley of the Giants Trail	0.8
	Subtotal	**99.8**
	Grand Total	**219.1**

The BLM still requires additional data and information on site-specific travel routes to be able to complete implementation-level travel management planning across the entire decision area. Route identification and comprehensive route inventories have been and are continuing to be collected to have this complete information available for implementation-level travel management planning.

Schedule for Implementation-Level Travel Planning

Consistent with current BLM policy, "travel management plans should be completed within five years of the signing of the ROD" (USDI BLM 2012, p. 55). Within the constraints of available planning resources, the BLM will be undertaking travel management planning as soon as practicable. Consistent with the terms and conditions in the incidental take statements accompanying the biological opinions on the Proposed RMP, in areas with listed fish or their designated critical habitat, the BLM will initiate travel management planning within five years of the effective date of the ROD and will complete travel management planning within ten years of the effective date of the ROD.

Districts will be responsible for identifying timelines to complete travel planning efforts. These timelines will identify areas in order of priority for completion, and will be updated regularly in all relevant planning areas to accelerate the accomplishment of data collection, route evaluation and selection, and on the ground implementation efforts including signing, monitoring, and rehabilitation. Prioritization of areas for completion of implementation-level travel management planning will follow the criteria included in this appendix.

Criteria to Prioritize Implementation-Level Travel Planning

The BLM will prioritize implementation-level travel management planning by reviewing lands within the decision area at the scale of areas designated for public motorized access (Travel Management Areas). The BLM will prioritize the order for completion of implementation-level travel management planning by prioritizing those areas meeting most of the following criteria first:

- Areas where damage to soil watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability is occurring
- Areas where harassment to wildlife or substantial disruption to wildlife habitats are occurring - prioritize areas where harassment to threatened and endangered species and their habitats are occurring
- Areas where conflicts between motorized and non-motorized recreational uses are occurring
- Areas where route, type of use, or season of use designations are necessary to support management objectives or management direction for the RMP-designated land use allocations
- Areas that have secured legal public access
- Areas also identified as Special Recreation Management Areas where a strong linear asset component is identified (e.g., mountain biking, hiking, equestrian, OHV)
- Areas with completed route inventories

Areas not meeting any of these criteria will be scheduled to be completed last. Where multiple areas meet an equal number of criteria for prioritization listed above, BLM districts will apply local knowledge of public concerns, interests, or controversies to prioritize areas to respond to local stakeholders and interested publics.

Plan Maintenance and Changes to Route Designations

The RMP includes indicators that will guide plan maintenance, amendments, or revisions (see **Appendix A**), including those related to designations for public motorized access or the approved road and trail systems. Future conditions may require the designation or construction of new routes or closure of routes to better address resources and resource use conflicts. The BLM will be able to modify actual route designations within the *limited* category through implementation-level travel management planning without necessitating an RMP amendment; compliance with NEPA will still be required.

The BLM will accomplish implementation-level travel management planning through plan maintenance. The BLM will collaborate with affected and interested parties in evaluating changes to the existing and designated road and trail network in *limited* area designations and changes to the broader Recreation Management Area designations that emphasize motorized OHV recreation. In conducting such evaluations, the BLM will consider the following:

- Routes suitable for various categories of OHVs and opportunities for shared trail use
- Needs for parking, trailheads, informational and directional signs, mapping and route profiles, and development of brochures or other materials for public dissemination
- Opportunities to tie into existing or planned route networks
- Measures needed to meet other resource objectives in the RMP

Management of Areas Designated for Public Motorized Access

Until implementation-level travel management planning is complete, the BLM will manage routes and trails in accordance with their designation of *closed* or *limited* to existing routes for public motorized travel activities, as described for each district.

Coos Bay District Public Motorized Access Designations

Table H-2. Coos Bay District public motorized access designations

Designation	Acres
Open	-
Limited to Existing Routes	317,458
Limited to Designated Routes	4,157
Closed	3,801

Description: Includes all BLM-administered lands within the Coos Bay District. See additional guidelines for the Blue Ridge OHV Travel Management Area.

***Limited* Area Management Guidelines:**

- The BLM will manage *limited* areas in accordance with all applicable Federal and State motorized vehicle regulations.
- The BLM will limit motorized vehicle use to administrative, commercial, and passenger vehicle traffic where not specifically signed or gated.
- Until road and trail designations are complete, all public motorized travel activities will be limited in the interim to the existing road and trail network unless closed or restricted under a previous planning effort or due to special circumstances as defined below:
    - The BLM may close or limit routes under seasonal or administrative restrictions. These restrictions may include, but are not limited to, fire danger, wet conditions, special requirements for wildlife species, protection of cultural resources, or for public safety.
- Vehicles may pull off roads or trails to park or allow others to pass, up to 25 feet from the centerline of the road or up to 15 feet from the centerline of a trail.
- Limitations apply to all Class I (all-terrain vehicles), Class II (four-wheel drive vehicles), and Class III (motorcycles) public motorized vehicles and to all activity types (e.g., recreational and commercial) unless authorized by the BLM for administrative purposes.

***Closed* Area Management Guidelines:** All motorized vehicles are prohibited from entering *closed* areas unless authorized by the BLM for administrative purposes

Process for ongoing public collaboration and outreach:

- The principal venue for public collaboration is through public outreach and scoping during future implementation-level travel management planning efforts, special projects, and local partnership.
- The BLM will send press releases as needed informing the public of motorized travel opportunities and restrictions. The BLM will post signs where appropriate.
- Upon completion of the implementation-level transportation management plan, maps and brochures will be available to the public at the Coos Bay District office illustrating designations, describing specific restrictions, and defining opportunities.

Process for selecting a final road and trail network: The BLM has completed route designations for the New River ACEC and the Blue Ridge OHV Travel Management Area. The BLM will accomplish final route designations for the rest of the district though implementation-level travel management planning. The BLM's geo-database will provide information for identifying roads and trails for both motorized and non-motorized activities. The BLM will continue to conduct on-the-ground inventories if roads and trails cannot be identified using remote-sensing techniques. The BLM will evaluate proposed designations through public scoping and a NEPA analysis. The BLM will consider changes to the designated system during the implementation-level travel management planning process.

Road and trail construction and maintenance standards: The BLM will construct and maintain roads and trails in accordance with the standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987) and other professional sources.

Bastendorff Beach Travel Management Area

The BLM completed route designations within the Bastendorff Beach area through the Bastendorff Beach Cooperative Management Plan Environmental Assessment (EA C030-2011-0006-EA). The BLM would continue to manage the Bastendorff Beach Travel Management Area in the Coos Bay District as a Recreation Management Area with a street-legal vehicle focus. The following management guidelines apply to the Bastendorff Beach Travel Management Area on the Coos Bay District:
Acres: 111

Public Motorized Access Designation: Limited to designated roads and trails.

Niche: Offers foredune access along beach; beach is closed to motorized vehicles.

Management Guidelines:

- Road, routes, and parking lots are available to street-legal vehicles only, to be compatible with the state's Ocean Shore State Recreation Area rules on the beach.

Process for ongoing public collaboration/outreach: The principal venue for public collaboration on the designated routes is through local partnership relationships. A designated route map is posted on-site at each of the four parking lots, and is available to the public online at the Coos Bay District office webpage. The designated route is marked on the ground with regulatory and directional signage.

Process for selecting a final road and trail network: The BLM completed route designations within the Bastendorff Beach Area through the Bastendorff Beach Cooperative Management Plan Environmental Assessment (EA C030-2011-0006-EA). The BLM would accomplish these modifications in collaboration with partners and users and through changes to Bastendorff Beach Cooperative Management Plan and an environmental assessment.

Road and trail construction and maintenance standards: The BLM would maintain roads in accordance with the design features identified in the environmental assessment, standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987), and other professional sources.

Blue Ridge Travel Management Area

The BLM completed route designations within the Blue Ridge Travel Management Area through the Blue Ridge Multiple Use Trail System environmental assessment (EA OR-125-98-18). The BLM will continue to manage the Blue Ridge Travel Management Area in the Coos Bay District as a Recreation Management Area with an off-highway vehicle focus. The following

management guidelines apply to the Blue Ridge Travel Management Area on the Coos Bay District:

Acres: 1,609

Designation: Limited to designated roads and trails; seasonal closure

Niche: Offers a multiple-use, single-track trail riding experience for hikers, equestrians, mountain bikers, and motorcycle riders.

Management Guidelines:

- The single-track trail system is available to Class III (motorcycles) vehicles with Oregon all-terrain vehicle permits and all non-motorized modes of travel.
- Motorized, mechanized, and equestrian use is prohibited between December and April to prevent excessive damage to the trail tread when soil moisture conditions are high. Motorized use on the trail system may be restricted during summer months due to fire hazard conditions.

Process for ongoing public collaboration/outreach: The principal venue for public collaboration on the trail system is through local partnership relationships. A printed trail map is available to the public at the Coos Bay District office and on the Coos Regional Trail Partnership webpage. The trail system is marked on the ground with regulatory and directional signage.

Process for selecting a final road and trail network: The BLM completed route designations through the Blue Ridge Multiple Use Trail System environmental assessment (EA OR-125-98-18). The BLM will use adaptive management to adjust the system for commercial timber production demands, user needs and resource protection. The BLM will accomplish these modifications in collaboration with trail partners and users and through changes to the Blue Ridge Trail system plan and an environmental assessment.

Road and trail construction and maintenance standards: The BLM will construct and maintain roads and trails in accordance with the design features identified in the environmental assessment, standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987), and other professional sources. Trail maintenance will be a priority within this Travel Management Area to ensure a quality riding experience for trail users and to conserve natural resource values.

Coos Bay Shorelands Travel Management Area

The BLM completed route designations within the Coos Bay Shorelands Travel Management Area through the Coos Bay Shorelands Management Plan and environmental assessment (EA OR-129-93-07). The BLM would continue to manage the Coos Bay Shorelands Travel Management Area in the Coos Bay District as a Recreation Management Area with a natural system focus. The following management guidelines apply to the Coos Bay Shorelands Travel Management Area on the Coos Bay District:

Acres: 1,700

OHV Designation: Limited to designated roads and trails.

Niche: Offers non-motorized and motorized opportunities including, access to beach, an interior trail experience for hikers and equestrians, and exterior motorized access along the Foredune and Bayside intertidal area sand roads. North Spit Boat Ramp facility affords the only boat access from the North Spit area to the lower Coos Bay channel.

Management Guidelines:

- Only the Foredune and Bayside intertidal area sand roads are available to motorized vehicles and may be restricted on a seasonal basis.
- North Spit Boat Ramp facility is accessible from County public road and only street-legal vehicles are allowed.
- Manage off-highway vehicle use on BLM-administered land to protect natural resources, provide visitor safety, and minimize conflicts among various users.
- Continue to provide non-motorized recreation opportunities and create additional opportunities where consistent with other management objectives.

Process for ongoing public collaboration/outreach: The principal venue for public collaboration on the trail system is through local partnership relationships. A printed trail map is available to the public at the Coos Bay District office webpage. The trail system is marked on the ground with regulatory and directional signage.

Process for selecting a final road and trail network: The BLM completed route designations through the Coos Bay Shorelands Management Plan and environmental assessment (EA OR-129-93-07). The BLM would accomplish these modifications in collaboration with partners and users and through changes to the Coos Bay Shorelands plan of 1995 and an environmental assessment.

Road and trail construction and maintenance standards: The BLM would construct and maintain roads and trails in accordance with the design features identified in the environmental assessment, standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987), and other professional sources. Trail maintenance would be a priority within this Travel Management Area to ensure a quality riding experience for trail users and to conserve natural resource values.

New River Travel Management Area

The BLM completed route designations within the New River ACEC through the New River ACEC Management Plan and environmental assessment (EA OR-128-93-15). The BLM would continue to manage the New River ACEC Travel Management Area in the Coos Bay District as a Recreation Management Area with an non-motorized focus. The following management guidelines apply to the New River ACEC Travel Management Area on the Coos Bay District:

Acres: 1135

Public Motorized Access Designation: Limited to designated roads and trails

Niche: Offers a non-motorized experience for hikers.

Management Guidelines:

- The trail system is available to non-motorized use.
- Vehicle use of River Road is available to street-legal vehicles and may be restricted on a seasonal basis.

Process for ongoing public collaboration/outreach: The principal venue for public collaboration on the trail system is through local partnership relationships. A printed trail map is available to the public at the Coos Bay District office and on the Coos Regional Trail Partnership webpage. The trail system is marked on the ground with regulatory and directional signage.

Process for selecting a final road and trail network: The BLM completed route designations through the New River ACEC Management Plan and environmental assessment (EA OR-128-93-15). The BLM would use adaptive management to adjust the system for user needs and resource protection. The BLM would accomplish these modifications in collaboration with trail partners and users and through changes to the New River ACEC Management Plan and an environmental assessment.

Road and trail construction and maintenance standards: The BLM would construct and maintain roads and trails in accordance with the design features identified in the environmental assessment, standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987), and other professional sources. Trail maintenance would be a priority within this Travel Management Area to ensure a quality experience for trail users and to conserve natural resource values.

Eugene District Public Motorized Access Designations

Table H-3. Eugene District public motorized access designations.

Designation	Acres
Open	-
Limited to Existing Routes	311,045
Limited to Designated Routes	-
Closed	2,661

Description: Includes all BLM-administered lands within the Eugene District.

***Limited* Area Management Guidelines:**

- The BLM will manage *limited* areas in accordance with all applicable Federal and State motorized vehicle regulations.
- The BLM will limit motorized vehicle use to administrative, commercial, and passenger vehicle traffic where not specifically signed or gated.
- Until road and trail designations are complete, all public motorized travel activities will be limited to the existing road and trail network unless closed or restricted under a previous planning effort or due to special circumstances as defined below:
  - The BLM may close or limit routes under seasonal or administrative restrictions. These restrictions may include, but are not limited to, fire danger, wet conditions, special requirements for wildlife species, protection of cultural resources, or for public safety.
- Vehicles may pull off roads or trails to park or allow others to pass, up to 25 feet from the centerline of the road or up to 15 feet from the centerline of a trail.
- Limitations apply to all Class I (all-terrain vehicles), Class II (four-wheel drive vehicles), and Class III (motorcycles) public motorized vehicles and to all activity types (e.g., recreational and commercial) unless authorized by the BLM for administrative purposes.

***Closed* Area Management Guidelines:** All motorized vehicles are prohibited from entering *closed* areas unless authorized by the BLM for administrative purposes

Process for ongoing public collaboration/outreach:

- The principal venue for public collaboration is through public outreach and scoping during future implementation-level travel management planning efforts, special projects, and local partnership.
- The BLM will send press releases as needed informing the public of motorized travel opportunities and restrictions. The BLM will post signs where appropriate.
- Upon completion of the implementation-level transportation management plan, maps and brochures shall be available to the public at the main office illustrating designations, describing specific restrictions, and defining opportunities.

Process for selecting a final road and trail network: The BLM will accomplish final route designations through implementation-level travel management planning. The BLM's geo-database will provide information for identifying roads and trails for both motorized and non-motorized activities. The BLM will continue to conduct on-the-ground inventories if roads and

trails cannot be identified using remote-sensing techniques. The BLM will evaluate proposed designations through public scoping and a NEPA analysis. The BLM will consider changes to the designated system during the transportation management planning process.

Road and trail construction and maintenance standards: The BLM will construct and maintain roads and trails in accordance with the standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987) and other professional sources.

Roseburg District Public Motorized Access Designations

Table H-4. Roseburg District public motorized access designations.

Designation	Acres
Open	-
Limited to Existing Routes	415,548
Limited to Designated Routes	-
Closed	10,258

Description: Includes all BLM-administered lands within the Roseburg District.

***Limited* Area Management Guidelines:**

- The BLM will manage *limited* areas in accordance with all applicable Federal and State motorized vehicle regulations.
- The BLM will limit motorized vehicle use to administrative, commercial, and passenger vehicle traffic where not specifically signed or gated.
- Until road and trail designations are complete, all public motorized travel activities will be limited in the interim to the existing road and trail network unless closed or restricted under a previous planning effort or due to special circumstances as defined below.
    - The BLM may close or limit routes under seasonal or administrative restrictions. These restrictions may include, but are not limited to, fire danger, wet conditions, special requirements for wildlife species, protection of cultural resources, or for public safety.
- Vehicles may pull off roads or trails to park or allow others to pass, up to 25 feet from the centerline of the road or up to 15 feet from the centerline of a trail.
- Limitations apply to all Class I (all-terrain vehicles), Class II (four-wheel drive vehicles), and Class III (motorcycles) public motorized vehicles and to all activity types (e.g., recreational and commercial) unless authorized by the BLM for administrative purposes.

***Closed* Area Management Guidelines:** All motorized vehicles are prohibited from entering *closed* areas unless authorized by the BLM for administrative purposes

Process for ongoing public collaboration/outreach:

- The principal venue for public collaboration is through public outreach and scoping during future implementation-level travel management planning efforts, special projects, and local partnership.
- The BLM will send press releases as needed informing the public of motorized travel opportunities and restrictions. The BLM will post signs where appropriate.
- Upon completion of the implementation-level transportation management plan, maps and brochures shall be available to the public at the Roseburg District office illustrating designations, describing specific restrictions, and defining opportunities.

Process for selecting a final road and trail network: The BLM will accomplish final route designations through implementation-level travel management planning. The BLM's geo-database will provide information for identifying roads and trails for both motorized and non-

motorized activities. The BLM will continue to conduct on-the-ground inventories if roads and trails cannot be identified using remote-sensing techniques. The BLM will evaluate proposed designations through public scoping and a NEPA analysis. The BLM will consider changes to the designated system during the implementation-level transportation planning.

Road and trail construction and maintenance standards: The BLM will construct and maintain roads and trails in accordance with the standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987) and other professional sources.

Salem District Public Motorized Access Designations

Table H-5. Salem District public motorized access designations.

Designation	Acres
Open	-
Limited to Existing Routes	373,588
Limited to Designated Routes	7,633
Closed	22,069

Description: Includes all BLM-administered lands within the Salem District. See additional guidelines for the Upper Nestucca OHV Area.

***Limited* to Existing Area Management Guidelines:**

- The BLM will manage *limited* areas in accordance with all applicable Federal and State motorized vehicle regulations.
- The BLM will limit motorized vehicle use to administrative, commercial, and passenger vehicle traffic where not specifically signed or gated.
- Until road and trail designations are complete, all public motorized travel activities will be limited in the interim to the existing road and trail network unless closed or restricted under a previous planning effort or due to special circumstances:
    - The BLM may close or limit routes under seasonal or administrative restrictions. These restrictions may include, but are not limited to, fire danger, wet conditions, special requirements for wildlife species, protection of cultural resources, or for public safety.
- Vehicles may pull off roads or trails to park or allow others to pass, up to 25 feet from the centerline of the road or up to 15 feet from the centerline of a trail.
- Limitations apply to all Class I (all-terrain vehicles), Class II (four-wheel drive vehicles), and Class III (motorcycles) public motorized vehicles and to all activity types (e.g., recreational and commercial) unless authorized by the BLM for administrative purposes.

***Closed* Area Management Guidelines:** All motorized vehicles are prohibited from entering *closed* areas unless authorized by the BLM for administrative purposes

Process for ongoing public collaboration/outreach:

- The principal venue for public collaboration is through public outreach and scoping during future implementation-level travel management planning efforts, special projects, and local partnership.
- The BLM will send press releases as needed informing the public of motorized travel opportunities and restrictions. The BLM will post signs where appropriate.
- Upon completion of the implementation-level management plan, maps and brochures shall be available to the public at the main office illustrating designations, and describing specific restrictions.

Process for selecting a final road and trail network: Route designations have been completed for the Upper Nestucca Travel Management Area. The BLM will accomplish final route designations through implementation-level travel management planning. The BLM's geo-database will provide information for identifying roads and trails for both motorized and non-motorized activities. The BLM has been and will continue to conduct on-the-ground inventories if roads and trails cannot be identified using remote-sensing techniques. The BLM will evaluate proposed designations through public scoping and a NEPA analysis. The BLM will consider changes to the existing system during implementation-level travel planning.

Road and trail construction and maintenance standards: The BLM will construct and maintain roads and trails in accordance with the standards in BLM Manual H-9114-1 – Trails (USDI BLM 1987) and other professional sources.

Upper Nestucca Travel Management Area

Acres: 9,579

Designation: Limited to designated roads and trails

Niche: Located 20 miles northwest of McMinnville, Oregon, this area provides Class I (all-terrain vehicles), and Class III (motorcycles) OHV riding experience along a designated road and trail network.

Management Guidelines:

- Designated trails and maintained roadways are limited to Class I and Class III motor vehicle use within the boundaries of the travel management area.
- All Class I and Class III vehicles must be equipped with approved spark arresters, an Oregon all-terrain vehicles sticker for the appropriate vehicle class, and must meet posted noise requirements.
- Class II vehicle use is only authorized on Road Maintenance Level 3 and Level 4 roadways[59].
- The BLM may restrict motorized use on the trail system during summer months due to fire hazard conditions.

[59] **Level 3** – This level is assigned to roads where management objectives require the road to be open seasonally or year-round for commercial, recreational, or administrative access. Typically, these roads are natural or aggregate surfaced, but may include low use bituminous surfaced road. These roads have a defined cross section with drainage structures (e.g., rolling dips, culverts, or ditches). These roads may be negotiated by passenger cars traveling at prudent speeds. User comfort and convenience are not considered a high priority. Drainage structures are to be inspected at least annually and maintained as needed. Grading is conducted to provide a reasonable level of riding comfort at prudent speeds for the road conditions. Brushing is conducted as needed to improve sight distance.
Level 4 – This level is assigned to roads where management objectives require the road to be open all year (except may be closed or have limited access due to snow conditions) and which connect major administrative features (recreational sites, local road systems, administrative sites, etc.) to County, State, or Federal roads. Typically, these roads are single or double lane, aggregate, or bituminous surface, with a higher volume of commercial and recreational traffic than administrative traffic.

- The BLM may permanently or temporarily close areas or trails for administrative use, extreme wet conditions, construction and reconstruction requirements, or other environmental concerns.

Process for ongoing public collaboration/outreach: The principal venue for public collaboration on the trail system is through local partnership with the Applegate Rough Riders Motorcycle Club. Trail maps are available to the public at the Salem District Office and Tillamook Field Office. The trail system is marked on the ground with regulatory and directional signage.

Process for selecting a final road and trail network: The BLM has completed route designations through the Upper Nestucca Motorcycle Trail System Environmental Assessment (EA OR 086-97-05). The BLM will use adaptive management to adjust the system for timber management, user needs, and resource protection.

Road and trail construction and maintenance standards: The BLM will construct and maintain roads and trails in accordance with the design features identified in the Monitoring and Maintenance Plan for the Upper Nestucca Trail System. Trail maintenance will be a priority within this travel management area to ensure a quality riding experience for trail users and to conserve natural resource values.

References

USDI BLM. 1987. BLM Manual Handbook H-9114-1 – Trails. Available at BLM district offices.

---. 2012. BLM Manual Handbook H-8342-1 – Travel and Transportation Management. 146 pp. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/west_mojave_plan_updates.Par.33567.File.dat/Travel%20and%20Transportation%20Management%20Handbook.pdf.

Acronyms and Abbreviations

This section provides the main acronyms and abbreviations used in the document.

ACEC	Area of Critical Environmental Concern
ASQ	allowable sale quantity
AUM	animal unit month
bf	board foot or board feet
BLM	Bureau of Land Management
BMP	best management practice
CBWR	Coos Bay Wagon Road
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DBH	diameter at breast height
DPS	distinct population segment
EIS	environmental impact statement
EPA	Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
FS	U.S. Forest Service
FTEM	Fuels Treatment Effectiveness Monitoring
FWS	U.S. Fish and Wildlife Service
GIS	geographic information system
HLB	Harvest Land Base
HUC	hydrologic unit code (e.g., HUC-10 watershed)
LITA	Low Intensity Timber Area
LSR	Late-Successional Reserve
LWCF	Land and Water Conservation Fund
Mbf	thousand board feet
MMbf	million board feet
MITA	Moderate Intensity Timber Area
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
O&C Act	Oregon and California Lands Act
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
OHV	off-highway vehicle
ONA	Outstanding Natural Area
QMD	quadratic mean diameter
RD	relative density
RMA	recreation management area

R&I	relevant and important (values)
RMP	resource management plan
RNA	Research Natural Area
ROD	record of decision
ROW	right-of-way
SDI	Stand Density Index
SOD	sudden oak death
SRMA	Special Recreation Management Area
TMDL	Total Maximum Daily Load
TMP	travel management plan
TPA	trees per acre
TPCC	Timber Productivity Capability Classification
USDA	United States Department of Agriculture
USDC	United States Department of Commerce
USDI	United States Department of Interior
USC	United States Code
VRM	visual resource management
WSR	Wild and Scenic River

Glossary

Acquired lands – Public lands that the Federal government has obtained by purchase, condemnation, gift, or exchange, as distinguished in the decision area from Coos Bay Wagon Road lands, O&C lands, and public domain lands.

Age class – A system that categorizes forest stands by interval of years. For this analysis, the interval is 10-year increments. For example, a stand of 10-year age class of 60 includes ages 56–65.

Air quality attainment area – A geographic area with air quality as good as or better than the National Ambient Air Quality Standards as defined in the Clean Air Act. An area may be in attainment for one or more criteria pollutants but also be in nonattainment for one or more other criteria pollutants.

Air quality maintenance area – A geographic area that had a history of nonattainment, but are now consistently meeting the National Ambient Air Quality Standards. Maintenance areas have been re-designated by the U.S. Environmental Protection Agency (EPA) from "nonattainment" to "attainment with a maintenance plan," or designated by the Environmental Quality Commission.

Air quality non-attainment area – A geographic area that has not consistently met the clean air levels set by the U.S. Environmental Protection Agency in the National Ambient Air Quality Standards.

Allotment – An area of land in which one or more livestock operators graze their livestock. Allotments generally consist of BLM-administered lands but may include other federally managed, state-owned, and private lands.

Allowable Sale Quantity – The timber volume that a forest can produce continuously under the intensity of management described in the RMP for those lands allocated for permanent timber production. The terms 'annual productive capacity,' 'annual sustained yield capacity,' 'sustained yield capacity,' and 'allowable sale quantity' are synonymous.

Animal Unit Month (AUM) – The amount of forage necessary for the sustenance of one cow or its equivalent for 1 month.

Annual productive capacity – See *allowable sale quantity.*

Annual sustained yield capacity – See *allowable sale quantity.*

Aquatic habitat – Habitat that occurs in free water.

Area of Critical Environmental Concern (ACEC) – Lands where special management attention is needed to protect and prevent irreparable damage to important historic, cultural, or

scenic values, fish, and wildlife resources or other natural systems or processes or to protect life and provide safety from natural hazards.

Basal area – The cross-sectional area of a single plant stem, of all stems of a species in a stand, or of all plants in a stand (including the bark) that is measured at breast height (about 4.5 feet up from the ground) for larger plants (like trees) or measured at ground level for smaller plants.

Bed load – Coarse sediment particles with a relatively fast settling rate that move by sliding, rolling, or bouncing along the streambed in response to higher stream flows.

Beneficial use – In water use law, reasonable use of water for a purpose consistent with the laws and best interest of the people of the state. Such uses include, but are not limited to, the following: instream, out of stream, and ground water uses, domestic, municipal, industrial water supply, mining, irrigation, livestock watering, fish and aquatic life, wildlife, fishing, water contact recreation, aesthetics and scenic attraction, hydropower, and commercial navigation.

Best Management Practices (BMPs) – Methods, measures, or practices designed to prevent or reduce water pollution. Usually, BMPs are applied as a system of practices rather than a single practice.

Biological Opinion – The document resulting from formal consultation that states the opinion of the Fish and Wildlife Service or National Marine Fisheries Service as to whether or not a Federal action is likely to jeopardize the continued existence of ESA-listed species or results in destruction or adverse modification of critical habitat.

Biomass – Plant materials used as a source of renewable combustible fuel. Also includes woody material ground up into fiber and used in secondary wood products.

Board foot (bf) – A lumber or timber measurement term. The amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide.

Breeding, nesting, roosting, foraging habitat – The vegetation with the age class, species composition, structure, sufficient area, and adequate food source to meet some or all of the life needs of specific species.

Broad based dip – Shallow gradual dips in the constructed road grade with a higher than road surface embankment angled across the road in the direction of water flow. The dip portion is used to drain ditch flows to the other side of the road where drainage can dissipate at ground level or exit upon an erosion resistant surface, if needed, to prevent erosion.

Broadcast burn(ing) – A prescribed burning activity where fire is applied generally to most or all of an area within well-defined boundaries for reduction of fuel hazard, as a resource management treatment, or both. Canopy is generally either non-existent or not an objective to retain.

Bureau Sensitive species – Plant or animal species eligible for ESA-listed or candidate, state listed, or state candidate (plant) status, are on list 1 in the Oregon Natural Heritage Data Base, or are approved for this category by the BLM State Director.

Cable yarding – The movement of cut trees or logs from the area where they are cut to the *landing* on a system composed of suspended cables.

Candidate species – Taxa for which the U.S. Fish and Wildlife Service has sufficient information on their status and threats to propose the species for listing as endangered or threatened under the Endangered Species Act, but for which issuance of a proposed rule is currently precluded by higher priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the Federal Register.

Canopy – The area consisting of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand. Where significant height differences occur between trees within a stand, formation of a multi-layered condition can result.

Canopy base height – The average distance (height) from the ground level to the lower branches of the trees that form the main forest canopy where there is sufficient crown loading in needle and 1-hour fuels for a certain level of surface fire intensity to transition into the crown.

Canopy cover – A measure of the percentage of ground covered by a vertical projection of the tree crowns.

Coarse woody debris – See *down woody material.*

Commercial thinning – Stand thinning in which some or all of the cut trees are removed from the stand for timber. 'Commercial thinning' in this context does not include individual tree falling or stand thinning in which all the cut trees are left in the stand or some of the cut trees are moved for restoration purposes, or fuels reduction treatments in which cut trees are burned, chipped, or otherwise disposed of without removal from the stand for timber. 'Commercial thinning' may be implemented through a variety of mechanisms, including timber sale contracts and stewardship agreements or contracts.

Commercial use (of roads) – The primary purpose for development and use of the BLM road system is access for forest management activities and the transportation of forest products. Commercial use of BLM's road system typically includes log hauling and aggregate hauling and is authorized by either 1) perpetual reciprocal right-of-way agreements between the United States and private timberland owners, or 2) BLM timber sale contracts.

Conservation strategy – A management plan for a species, group of species, or ecosystem that prescribes standards and guidelines that if implemented provide a high likelihood that the species, groups of species, or ecosystem, with its full complement of species and processes, will continue to exist well distributed throughout a planning area.

Consultation – A formal interaction between the U.S. Fish and Wildlife Service and another Federal agency when it is determined that the agency's action may affect a species that has been ESA-listed as threatened or endangered or its critical habitat

Coos Bay Wagon Road (CBWR) Lands – Public lands that were granted to the Southern Oregon Company for construction of a military road, but were subsequently reconveyed to the United States.

Council on Environmental Quality (CEQ) – An advisory council to the President of the U.S. that was established by the National Environmental Policy Act of 1969. It reviews Federal programs to analyze and interpret environmental trends and information.

Critical habitat – Under the Endangered Species Act, critical habitat is defined as: (1) the specific areas within the geographic area occupied by an ESA-listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by an ESA-listed species, when it is determined that such areas are essential for the conservation of the species.

Cross drain culvert – Culverts strategically installed to pass ditch runoff or drain seeps and springs safely under the road prism (often referred to as relief culverts).

Crown (of road) – The center of the road being higher than the outer edges, creating a nearly flat A-shape with a normal cross slope of ½" to ¾" per foot.

Crown (of tree) – Upper part of a tree or other woody plant that carries the main system of branches and the foliage.

Crown fire – A fire in the upper tree or shrub canopy. Crown fires are sometimes classified as independent (conditional) or dependent (active or passive) to distinguish the degree of independence from the surface fire.

Cultural resources – Locations of human activity, occupation, or use. Cultural resources include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and locations of traditional cultural or religious importance to specified social or cultural groups.

Culvert – Enclosed channels of various materials and shapes designed to convey stream or ditch water under and away from the roadway.

Decision area – The lands within the planning area of this RMP revisions for which the BLM has authority to make land use and management decisions. In general, the BLM has jurisdiction over all BLM-administered lands (surface and subsurface) and over mineral estate in areas of split estate (i.e., areas where the BLM administers Federal mineral estate, but the surface is not owned by the BLM).

Decommissioning (of roads) – See *road closure.*

Detrimental soil disturbance – The limit where the naturally occurring soil properties change to a reduced state and the inherent soil capacity to sustain growth of desired vegetation is reduced. Detrimental soil disturbance generally represents any one or all of the following; unacceptable levels of erosion (i.e., formation of rills, gullies, pedestals, or soil deposition), loss of organic matter (removal of more than half the organically enriched upper horizon), soil compaction (increase in natural bulk density that restricts root growth or wheel (or track) ruts > 2" deep), soil heating (physical and biological changes to the soil resulting from elevated temperatures of long duration), or soil displacement (removal of ≥ 1" of any surface horizon from a contiguous area greater than 100 sq. ft.).

Diameter breast height (DBH) – The diameter of the stem of a tree measured at 4.5 feet above the ground level on the uphill side of the stem. See *quadratic mean diameter*.

Dispersal habitat (northern spotted owl) – Forest stands with average tree diameters of greater than11 inches, and conifer overstory trees having closed canopies (greater than 40 percent canopy closure) with open space beneath the canopy to allow owls to fly.

Dispersed retention – See *variable-retention harvest system.*

Disposal – Transfer of public land out of Federal ownership to another party through sale or exchange as authorized by the Recreation and Public Purposes Act of 1926, Desert Land Entry or other land law statutes

Distinct population segment (DPS) – a discrete population of a species and the smallest portion of a vertebrate species that can be protected under the Endangered Species Act.

Disruption (ESA-listed wildlife) – A type of disturbance that that creates the likelihood of injury to ESA-listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (see 50 CFR 17.3). Disruption is a subset of disturbance. An action that would disrupt the normal behavior of an ESA-listed species may affect, and would be likely to adversely affect, the species and would cause the taking of affected individual(s).

Disturbance (ESA-listed wildlife) – A human action that may affect an ESA-listed animal species by the addition, above ambient condition, of noise or human intrusion, or the mechanical movement of habitat (e.g., the shaking of the forest canopy from helicopter rotor wash). Disturbance is temporary/short term (minutes to days) and does not modify habitat structure, or water/air flow or quality. Disturbance should not be confused with "surface disturbance," which refers to an action that modifies soil, water, or vegetation. Disturbance requires the presence of an ESA-listed animal.

Disturbance (natural) – A force that causes significant change in structure or composition through natural events such as fire, flood, wind, or earthquake, mortality caused by insect or disease outbreaks, or by human-caused events such as the harvest of forest products.

Down woody material/coarse woody debris – Portion of a tree that has fallen, or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter.

Durable rock surfacing – Durability is an indicator of the relative quality or competence of an aggregate to resist abrasion, impact or grinding to produce clay like fines when subjected to commercial hauling. Durable rock surfacing will support commercial timber or rock haul in the winter with a minimal level of fines produced due to wear.

Dry season (for roads) – An annually variable period of time, starting after spring rains cease and when hillslope subsurface flow declines; drying intermittent streams and roadside ditches. Generally June through October, but may start or end earlier depending on seasonal precipitation influences.

Effective depth of decompaction – The depth to which the soil is tilled or loosened to provide infiltration capacity that is near to the adjacent undisturbed forest floor. Measured depth is from road surface to bottom of evidence of platy soil or increased bulk density that impedes water transmission.

Eligible river – A river or river segment found to meet criteria found in Sections 1(b) and 2(b) of the Wild and Scenic Rivers Act of being free flowing and possessing one or more outstandingly remarkable value.

Endangered species – Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register.

Environmental Impact Statement (EIS) – A detailed statement prepared by the responsible official in which a major Federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed.

Fire frequency – The number of times that fires occur within a defined area and time period.

Fire hazard – A fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and of resistance to control.

Fire regime – Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites.

Fire resilient forest – A forest having characteristics that limit fire severity and increase the resistance of the forest to mortality

Fire suppression – Fire management actions taken to extinguish a fire or confine fire spread.

Fifth-field watershed – Individual watershed within a Hydrologic Unit as defined by the U.S. Geological Survey, typically averages 87,000 acres in size.

Floodplain – Level lowland bordering a stream or river onto which the flow spreads at flood stage.

Forage – All browse and herbaceous foods available to grazing animals, including wildlife and domestic livestock

Forestland – Land at least 10 percent stocked by forest trees of any size, and including land that formerly had such tree cover and capable of redeveloping forested conditions.

Fluid minerals – Oil, gas, coal bed natural gas, and geothermal resources.

Fuel loads – The amount of combustible material present per unit area.

Full decommissioning (of roads) – See *road closure.*

Geothermal energy – Natural heat from within the Earth, captured for production of electric power, space heating or industrial steam.

Grade break – A long, gradual break in grade on a road with a relatively gradual downhill slope that improves drainage. Grade breaks limit water flow by decreasing concentration and velocity from a reduced area of road section.

Green tree – A live tree.

Green-tree retention – A stand management practice in which live trees are left within harvest units to provide a legacy of habitat components over the next management cycle. See *variable-retention harvest*.

Ground-based yarding – The movement of cut trees or logs from the area where they are cut to the landing through the use of mechanical equipment or animals that move along the ground.

Group selection harvest – Areas in a *commercial thinning* or *selection harvest* entry where trees are harvested in groups of varying sizes. Synonymous with ‘patch cut,’ and ‘gap creation.’ See also *group selection opening*.

Group selection opening – The resulting forest condition, which exists after *group selection harvesting* is employed. An area in the *stand* with a low level of *canopy cover* and relatively few remaining *overstory* trees. Synonymous with ‘gap.’

Hand pile – Piling of fuels by hand.

Harvesting – The process of cutting and removing of merchantable trees from a forested area.

Harvest Land Base – Those lands on which the determination and declaration of the Annual Productive Capacity/Allowable Sale Quantity (ASQ) is based. The ASQ is based on implementing a set of specific timber management activities and assumes those practices will be repeated over time and results in a sustainable harvest level.

Helicopter yarding – The movement of cut trees or logs from the area where they are cut to the landing through the use of helicopters.

Herbaceous vegetation – Seed-producing annual, biennial, or perennial vegetation that does not develop persistent woody tissue, but dies down at the end of a growing season.

High intrinsic potential streams – streams with the habitat features that are known to be highly productive for an individual fish species.

High sediment producing roads – Roads whose physical characteristics and rights of way vegetation, in combination with precipitation in the watershed and traffic result in high erosion rates.

High-severity fire – Greater than 75 percent of the total canopy cover, or basal area, is killed by the sum of all fire effects.

Insloping – Constructing and maintaining the entire surface of the road toward the cutslope side of the road.

Intermittent stream – A non-permanent drainage feature with a dry period, normally for three months or more. Flowing water forms a channel feature with well-defined bed and banks, and bed-forms showing annual scour or deposition, within a continuous channel network.

Intrinsic potential (stream) – A stream's inherent ability to provide high quality habitat for salmonids.

Integrated vegetation management – A combination of silviculture treatments, fire and fuels management activities, and harvest methods. Activities include planting, prescribed fire, thinning, single-tree selection harvest, and group selection harvest.

Invasive species – A non-native species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health.

Ladder fuel – Fuel that provides vertical continuity between forest strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

Landing – A cleared area in the forest to which logs are yarded for loading onto trucks for transport.

Landscape – A heterogeneous land area with interacting ecosystems that are repeated in similar form throughout.

Land Use Allocation – The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions.

Lead-off ditch – A formed channel that diverts ditch water away from the road, usually angled in the direction of water flow and placed at locations to empty into vegetative filtering areas.

Leasable minerals – Minerals generally found in bedded deposits and include oil, gas, coal, chlorides, sulfates, carbonates, borates, silicates, and nitrates of potassium (potash) or sodium and related products; sulfur; phosphate and its associated and related minerals; asphalt; and gilsonite.

Locatable minerals – Metallic minerals (e.g., gold, silver, lead, copper, zinc, and nickel) and nonmetallic minerals (fluorspar, mica, certain limestone and gypsum, tantalum, heavy minerals in placer form and gemstones) in land belonging to the United States that are open to citizens of the United States for exploration, discovery, and location which conveys the possessory right to extract the locatable minerals upon receiving all required authorizations in accordance with regulations at 43 CFR 3802 for lands in wilderness review and 43 CFR 3809 for other public lands.

Low-severity fire – Less than 25 percent of the total canopy cover or basal area is killed by the sum of all fire effects.

Low volume road – A road that is functionally classified as a resource road and has a design average daily traffic volume of 20 vehicles per day or less.

Machine pile – The piling of activity fuels with machinery.

Management direction – Rules in an RMP that identify where future actions may or may not be allowed and what restrictions or requirements may be placed on those future actions to achieve the objectives set for the BLM-administered lands and resources.

Management objective – Descriptions of desired outcomes for BLM-administered lands and resources in an RMP; the resource conditions that the BLM envisions or desires would eventually result from implementation of actions consistent with the RMP. As such, management objectives are not rules, restrictions, or requirements by which the BLM determines which implementation actions to conduct or how to design specific implementation actions.

Mass wasting – The downslope movement of earth materials caused by gravity. This is an all-inclusive term that includes, but is not limited to landslides, rock falls, debris avalanches, and creep; however, it does not include surface erosion by running water.

Mechanical mastication – The mechanical crushing, grinding, shredding of shrubs, small trees, and downed woody material, leaving a low profile, matted, continuous surface fuel bed.

Merchantable – Trees or stands having the size, quality, and condition suitable for marketing under a given economic condition, even if not immediately accessible for logging.

Mineral estate – The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mining claim – A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

Mitigation – The act of reducing or eliminating an adverse environmental impact.

Mixed-severity fire – The severity of fires varies between nonlethal understory and lethal stand-replacement fire with the variation occurring in space or time. The result may be a mosaic of young, older, and multiple-aged vegetation patches as a function of landscape complexity or vegetation patterning. Typically, more than 25 percent and less than 75 percent of the total canopy cover or basal area is killed by the sum of all effects. Fires may also vary over time between low-intensity surface fires and longer-interval stand replacement fires.

Monitoring – The review on a sample basis, of management practices to determine how well objectives are being met, as well as the effects of those management practices on the land and environment.

Multi-layered canopy – Forest *stands* with two or more distinct *canopy* layers.

National Landscape Conservation System (National Conservation Lands) – Special Congressional or Presidential land use designations such as National Monuments, Wild and Scenic Rivers, and Wilderness Areas.

Non-commercial thinning (management) – Cutting merchantable trees but retaining the cut trees within the *stand* or moving them to other stands or to streams for non-commercial purposes.

No Surface Occupancy – A fluid minerals leasing major constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the No Surface Occupancy area, or application of waivers, exceptions, or modifications.

O&C lands – Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

Occupied stand (marbled murrelet) – Marbled murrelet occupied stand refers to all forest stands, regardless of age or structure, within 1/4 mile (1,320 feet) of the location of marbled murrelet behavior indicating occupancy and not separated from the location of marbled murrelet behavior indicating occupancy by more than 328 feet of non-forest.

ODFW instream work period – Oregon Department of Fish and Wildlife designated guidelines that identify periods of time for in-water work that would have the least impact on important fish, wildlife, and habitat resources. Work periods are established to avoid the vulnerable life stages of fish including migration, spawning and rearing. Work periods are established for the named stream, all upstream tributaries, and associated lakes within a watershed (ODFW 2008, Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources).

Obliteration (of roads) – See *road closure.*

Off-Highway Vehicle (OHV) – Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

Ordinary high water line – The line on the stream bank or shore to which the high water ordinarily rises each year and is the waterward limit of upland vegetation and soil. This line is not established based on the level to which the water rises during major floods.

Outsloping – Constructing and maintaining the entire surface of the road toward the fillslope side of the road.

Outstandingly Remarkable Values – Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values..." Other similar values that may be considered include ecological, biological, or botanical.

Overstory – That portion of trees forming the uppermost canopy layer in a forest stand and that consists of more than one distinct layer.

Paleontological resource – Any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth.

Peak flow – The highest amount of stream or river flow occurring in a year, or from a single storm event.

Perennial stream – A stream that typically has running water on a year-round basis. Their base level is at, or below, the water table.

Pile burning – Activity fuels, once piled by machine or by hand, are burned in place.

Pioneer road – Temporary access ways, within the path of the permanent road, used to facilitate construction and equipment access. When building permanent roads, pioneer roads exist within the template of the finished road.

Planning area – All lands within the geographic boundary of this RMP revision regardless of jurisdiction.

Planned ignition – The intentional initiation of a wildland fire by hand-held, mechanical or aerial device where the distance and timing between ignition lines or points and the sequence of igniting them is determined by environmental conditions (weather, fuel, topography), firing technique, and other factors which influence fire behavior and fire effects.

Pre-commercial thinning – The practice of reducing the density of trees within a stand by manual cutting, girdling, or herbicides to maintain or promote growth increases of desirable tree species. The trees killed are generally not *merchantable* and not removed from the treated area.

Prescribed fire – A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which NEPA requirements have been met prior to ignition. See *planned ignition*.

Progeny test site – A test area for evaluating parent seed trees by comparing the growth of their offspring seedlings.

Public domain lands – Original holdings of the United States never granted or conveyed to other jurisdictions, or reacquired by exchange for other public domain lands.

Public land – Land or interest in land owned by the U.S. and administered by the Secretary of the Interior through the BLM without regard to how the U.S. acquired ownership, except lands located on the Outer Continental Shelf and land held for the benefit of Indians, Aleuts, and Eskimos.

Public motorized access designation – Designation of lands made in a land use plan for public **motorized travel activities:**

> ***Limited*—**Public motorized travel activities are restricted at certain times, in certain areas, to certain routes, or to certain types of motorized vehicular use.
> ***Closed*—**Public motorized travel activities are prohibited anywhere in the area.

Quadratic mean diameter – The diameter of the tree of average basal area in a stand at breast height. See *diameter breast height*.

Recovery plan – A plan for the conservation and survival of an endangered species or a threatened species listed under the Endangered Species Act, for the purpose of improving the status of the species to the point where listing is no longer required.

Regeneration – (n.) Tree seedlings or saplings existing in a stand. (v.) The process of re-establishing trees on a tract of forestland where harvest or some natural event has removed existing trees.

Regeneration harvest(ing) – Any removal of trees intended to assist regeneration already present or make regeneration possible.

Relative density (RD) – A means of describing the level of competition among trees or site occupancy in a stand, relative to some theoretical maximum based on tree density, size, and species composition. Relative density percent is calculated by expressing *Stand Density Index (SDI)* (Reineke 1933) as a percentage of the theoretical maximum SDI, which varies by tree species and range. Curtis's relative density (Curtis 1982) is determined mathematically by dividing the stand basal area by the square root of the *quadratic mean diameter*. See also *Stand Density Index*.

Relevant and important resource value – Criteria used to evaluate nominated Areas of Critical Environmental Concern.

Renewable energy – See *sustainable energy.*

Renovation (of roads) – Work done to an existing road, restoring it to its original design standard

Resource Management Plan (RMP) – A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, management objectives, and management direction.

Resource road – Roads that provide a point of access to public lands and connect with local or collector roads.

Right-of-way – Authorization to use public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, and so on; also, the lands covered by an easement or permit.

Riparian area – A geographic area containing an aquatic ecosystem and adjacent upland areas that directly affect it.

Road closure – Closing roads to use in any of the following categories:

- Temporary/Seasonal/Limited Access – These are typically resource roads, closed with a gate or barrier. The road will be closed to public vehicular traffic but may be open for BLM/Permittee commercial activities. The road may or may not be closed to BLM administrative uses on a seasonal basis depending upon impacts to the resources. Drainage structures will be left in place.
- Decommission (long-term) –The road segment will be closed to vehicles on a long-term basis, but may be used again in the future. Prior to closure the road will be left in an erosion-resistant condition by establishing cross drains, eliminating diversion potential at stream channels, and stabilizing or removing fills on unstable areas. Exposed soils will be treated to reduce sediment delivery to streams. The road will be closed with an earthen barrier or its equivalent. This category can include roads that have been or will be closed due to a natural process (abandonment) and may be opened and maintained for future use.
- Full Decommission (permanent) – Roads determined to have no future need may be subsoiled (or tilled), seeded, mulched, and planted to reestablish vegetation. Cross drains,

fills in stream channels, and unstable areas will be removed, if necessary, to restore natural hydrologic flow. The road will be closed with an earthen barrier or its equivalent. The road will not require future maintenance. This category includes roads that have been closed due to a natural process (abandonment) and where hydrologic flow has been naturally restored.

- Obliteration (full site restoration/permanent) – Roads receiving this level of treatment have no future need. All drainage structures will be removed. Fill material used in the original road construction will be excavated and placed on the subgrade in an attempt to reestablish the original ground line. Exposed soil will be vegetated with native trees or other native vegetation. Road closure by obliteration is rarely used.

Rotation [age] – The planned number of years between the establishment of an even-aged or two-aged forest stand and its regeneration harvest.

Salable minerals – Minerals including but not limited to petrified wood and common varieties of sand, stone, gravel, pumice, pumicite, cinder, clay, and rock.

Salvage harvest(ing) – Removal of dead trees or of trees damaged or dying because of injurious agents other than competition, to recover their economic value.

Sediment – Fine particles of inorganic or organic matter carried by water.

Seed orchard – A plantation of clones or seedlings from selected trees; isolated to reduce pollination from outside sources, weeded of undesirables, and cultured for early and abundant production of seed.

Selection harvest(ing) – A method of uneven-aged management involving the harvesting of single trees from stands (single-tree selection) or in groups up to four (4) acres in size (group selection) without harvesting the entire stand at any one time.

Seral stages – The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage.

Shelterwood harvest(ing) – A regeneration harvest method under an even-aged silvicultural system. With this method a portion of the mature stand is retained as a source of protection during the regeneration period. The retained trees are removed when protection requirements have been met.

Shotgun culverts – Ditch relief or stream culverts where the outlet extends beyond the natural ground line.

Silvicultural practices (or treatments or system) – The set of field techniques and general methods used to modify and manage a forest stand over time to meet desires conditions and objectives. Examples include reforestation, pre-commercial thinning, and commercial thinning.

Silvicultural prescription – A planned series of treatments designed to change current stand structure to one that meets management goals.

Silvicultural system – A planned series of treatments for tending, harvesting, and reestablishing a *stand*. The system name is based on the number of age classes managed within a stand (e.g., even-aged, two-aged, and uneven-aged).

Site-potential tree height – The average maximum height of the tallest dominant trees (200 years or older) for a given site class. Site-potential tree heights generally range from 140 feet to 240 feet across the decision area, depending on site productivity.

Skips – Portions of a *stand* generally left untreated after a *commercial thinning* or *selection harvest*. Skips are used to increase variability of forest conditions in the post-harvest stand, and to create desirable habitats and ecological conditions.

Slash – The branches, bark, tops, cull logs, and broken or uprooted trees left on the ground after logging has been completed.

Slope stability – The resistance of a natural or artificial slope, or other inclined surface, to failure by landsliding (mass movement).

Snag – Any standing dead, partially dead, or defective (cull) tree at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

Soil compaction – An increase of the soil bulk density (weight per unit volume) compared to undisturbed soil, and a decrease in porosity (particularly macropores) resulting from applied loads, vibration or pressure.

Soil productivity – Capacity or suitability of a soil, for establishment and growth of a specified crop or plant species.

Soil quality – The capacity of a soil to function for specific land uses or within ecosystem boundaries. This capacity is an inherent characteristic of a soil and varies from soil to soil. Indicators such as organic-matter content, salinity, tilth, compaction, available nutrients, and rooting depth help measure the health or condition of the soil-its quality-in any given place.

Special forest products – Those plant and fungi resources that are harvested, gathered or collected by permit, and have social, economic, or spiritual value. Common examples include mushrooms, firewood, Christmas trees, tree burls, edibles and medicinals, mosses and lichens, floral and greenery, and seeds and cones, but not soil, rocks, fossils, insects, animal parts, or any timber products of commercial value.

Special status species – Plant or animal species in any of the following categories:

- Threatened or endangered species
- Proposed threatened or endangered species

- Candidate species
- State-listed species
- Bureau sensitive species

Stand – An aggregation of trees occupying a specific area managed as a discrete operational or management unit. A stand may be composed of trees and groups of trees of a variety of ages, species, and conditions, or it may be relatively uniform. A stand may also contain multiple *land use allocations*.

Stand conversion – Converting one type of forest stand to another type. Typically refers to changing areas dominated by hardwood species to one dominated by conifer species.

Stand Density Index (SDI) – Reineke's (1933) stand density index is a function of quadratic mean diameter and number of trees per unit area. SDI can be interpreted as the number of 10 inch trees that would experience approximately the same level of inter-tree competition as the observed number of trees with the observed mean diameter. See also *relative density*.

Stand replacement fire – A fire that is lethal to most of the dominant above ground vegetation and substantially changes the vegetation structure. Stand replacement fires may occur in forests, woodlands and savannas, annual grasslands, and shrublands. They may be crown fires, high-severity surface fires, or ground fires.

State-listed species – Plant or animal species listed by the State of Oregon as threatened or endangered pursuant to ORS 496.004, ORS 498.026, or ORS 564.040.

Storm-proof – Roads having a self-maintaining condition, allowing unimpeded flows at channel crossings and surface conditions that reduce chronic sediment input to stream channels.

Stream reach – An individual first order stream or a segment of another stream that has beginning and ending points at a stream confluence. Reach end points are normally designated where a tributary confluence changes the channel character or order. Although reaches identified by BLM are variable in length, they normally have a range of 0.5 mile to 1.5 miles in length unless channel character, confluence distribution, or management considerations dictate variance. See also *turbidity*.

Suitable River – An eligible river segment found through administrative study to meet the criteria for designation as a component of the National System, as specified in Section 4(a) of the Wild and Scenic Rivers Act.

Sustainable energy – Energy that comes from resources that are naturally replenished on a human timescale such as sunlight, wind, rain, tides, waves, and geothermal heat, as opposed to 'fossil energy' which comes from resources replenished on a geological timescale.

Sustained yield – The board foot volume of timber that a forest can produce in perpetuity at a given intensity of management; the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources.

Sustained yield capacity – See *allowable sale quantity.*

Sustained yield unit (SYU) – An administrative unit for which an allowable sale quantity is calculated; in western Oregon, the six sustained yield units correspond to the Coos Bay, Eugene, Medford, Roseburg, and Salem Districts, and the western portion of the Klamath Falls Field Office.

Temporary Road – A short-term use road authorized for the development of a project that has a finite lifespan (e.g., a timber sale spur road). Temporary roads are not part of the permanent designated transportation network and must be reclaimed when their intended purpose has been fulfilled.

Thinning – A silvicultural treatment made to reduce the density of trees primarily to improve tree/stand growth and vigor, or recover potential mortality of trees, generally for commodity use. See *pre-commercial thinning*, *commercial thinning*, *variable-density thinning.*

Timber Production Capability Classification (TPCC) – The process of partitioning forestland within the sustained yield unit into major classes based on the biological and physical capability of the site to support and produce forest products on a sustained yield basis using operational management practices.

Timber volume – Amount of timber contained in a log, a stand, or a forest, typically measured in board feet or cubic feet.

Threatened species – Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Torching – The burning of the foliage of a single tree or a small group of trees, from the bottom up. See *passive crown fire*.

Travel Management Area – Delineated areas where travel management requires particular focus. These areas may be designated as open, closed, or limited to motorized use. See *public motorized access designation*.

Tree-tipping – Mechanically tipping or pulling over trees with root wads attached, generally into or near a stream, to simulate natural wood recruitment.

Turbidity – The cloudiness exhibited by water carrying sediment; the degree to which suspended sediment interferes with light passage through water.

Uncharacteristic wildfire – fire processes occurring outside of their biophysical baseline conditions (i.e., outside of historical natural fire regimes) and often at such high intensity and severity that important ecosystem components or processes are altered or destroyed over substantial portions of the burned area.

Underburn – A fire that consumes surface fuels but not the overstory canopy.

Underburning – Prescribed burning under a forest canopy.

Underdrain – Culverts installed to convey water from springs, and seeps encountered during road construction, under the road.

Understory – That portion of trees or other woody vegetation, which form the lower layer in a forest stand, which consists of more than one distinct layer.

Uneven-aged management – A silvicultural system that simultaneously maintains high degree of tall forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. Harvesting methods that develop and maintain uneven-aged stands are single-tree selection, group selection, and thinning.

Uneven-aged stand – A stand composed of at least three (3) distinct age classes intimately mixed or in aggregated groups producing a multi-layered canopy structure managed as a discrete operational unit.

Use of wildland fire – Management of either wildfire or prescribed fire to meet resource objectives.

Variable-retention regeneration harvest or variable retention harvest – An approach to regeneration harvesting that is based on the retention of structural elements or biological legacies from the harvested stand for integration into the new stand to achieve various ecological objectives. The resultant stand is generally two-aged or multi-aged. The major variables in variable- retention harvest systems are the types, densities and spatial arrangement of the retained structures; (1) aggregated retention is the retention of structures as (typically) intact forest patches within or adjacent to the harvest unit; (2) dispersed retention is the retention of structures or biological legacies in a more or less scattered pattern. Variable-retention regeneration harvest is synonymous with green-tree retention, retention harvest, retention forestry.

Visual Resource Management (VRM) – The inventory and planning actions to identify values and establish objectives for managing those values and the management actions to achieve those objectives

Visual Resource Management classes – Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape.

Water drafting site – Site to provide a short duration, small pump operation that withdraws water from streams or impoundments to fill conventional tank trucks or trailers.

Water quality – The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Water harvesting pond – Ponds constructed to capture and store rainwater or snowmelt.

Waters of the State – Includes lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private which are wholly or partially within or bordering the State or within its jurisdiction. ORS 468B.005(10).

Watershed – An area in which all surface waters flow to a common point.

Wet season (for roads) – An annually variable period of time, starting after precipitation amounts saturate soils. This occurs after the onset of fairly continuous fall rains, which result in seasonal runoff in ephemeral and intermittent stream channels and from the road surface and ditches. Generally November through May, but could start or end earlier depending on seasonal precipitation influences.

Wetland – Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined by the 1972 Federal Clean Water Act. These wetlands generally meet the jurisdictional wetland criteria.

Wild and Scenic Rivers system – A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and are preserved in a free-flowing condition.

Wilderness – An area defined in Section 2(c) of the Wilderness Act, and formally designated by Congress as part of the National Wilderness Preservation System.

Wilderness characteristics – These attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values. Lands with wilderness characteristics are those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act.

Wilderness Study Area – Areas with wilderness characteristics identified and designated through the inventory and study processes authorized by Section 603 of the FLPMA, and, prior to 2003, through the planning process authorized by Section 202 of the FLPMA.

Wildfire – Unplanned ignition of a wildland fire (such as a fire caused by lightning or unauthorized and accidental human-caused fires) and escaped prescribed fires.

Wildland Developed Areas – A delineation of where people live in the wildland, classifying a minimum of one structure per 40 acres as a developed area.

Wildland fire – A general term describing a non-structure fire that occurs in the wildland.

Wildland Urban Interface (WUI) – The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels.

Yarding – The process of moving cut logs to a landing, particularly by cable, ground-based or helicopter yarding systems.

References

Curtis, R. O. 1982. A simple index of stand density for Douglas-fir. Forest Science **28**(1): 92–94. http://www.fs.fed.us/pnw/olympia/silv/publications/opt/232_Curtis1982.pdf.

Oregon Department of Fish and Wildlife (ODFW). 2008. Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources. June 2008. 12 pp. http://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_%20InWater_Work2008.pdf.

Reineke, L. H. 1933. Perfecting a stand-density index for even-aged forests. Journal of Agricultural Research **46**(7): 627–638. 12 pp. http://naldc.nal.usda.gov/naldc/download.xhtml?id=IND43968212&content=PDF.

United States Department of the Interior
Bureau of Land Management - Oregon & Washington
1220 SW 3rd Avenue
Portland, OR 97204

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

FIRST CLASS MAIL
POSTAGE AND FEES PAID
Bureau of Land Management
Permit No. G-76



BLM/OR/WA/GI-16/042+1792

Attachment I-2. Glare Analysis Reports

TETRA TECH

MEMO

To:	Muddy Creek Energy Center, LLC
From:	Drew Timmis, Tetra Tech, Inc.
Date:	April 30, 2026
Subject:	Glint and Glare Analysis of the Muddy Creek Energy Center in Linn County, Oregon

At the request of Muddy Creek Energy Center, LLC (Muddy Creek), Tetra Tech, Inc. (Tetra Tech) conducted a glint and glare analysis of the proposed Muddy Creek Energy Center (Project). The Project site occupies an approximately 1,590-acre area. The Project site primarily consists of agricultural land and is located to the east of I-5 and approximately 1.5 miles north of the City of Eugene in Lane County, Oregon. Topography throughout the Project site varies, ranging from approximately 330 feet above mean sea level (amsl) to 377 feet amsl.

This memorandum provides a description of the glint and glare anticipated from use of the Project site as a solar energy generating facility. Included are the Sandia glare analysis reports (Attachment A), and the Federal Aviation Administration (FAA) Notice Criteria Tool Report (Attachment B).

GLARE ANALYSIS METHOD

To model glint and glare impacts, industry standards rely on use of the SGHAT, a modeling/compliance analysis tool now licensed for public use within the ForgeSolar GlareGauge cloud software application. The SGHAT is considered the industry-best practice for analysis of glare and glint related to solar energy generating facilities.

The following statement was issued by Sandia Laboratories regarding the SGHAT technology:

> *"Sandia deisveloped SGHAT v. 4.0, a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g. anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard (Ho and Sim, 2017)."*

Note, however, that this model presents a conservative assessment based upon simplifying assumptions inherent in the model as well as industry improvements, since the most recent update of such assumptions.

Based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to receptors, the ForgeSolar GlareGauge categorizes potential glare, where it is predicted by the model to occur, in accordance with the following three tiers of severity (ocular hazards) that are shown by different colors in the model output.

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn)
- Yellow glare: glare predicted with a potential for temporary after-image
- Green glare: glare predicted with a low potential for temporary after-image

These categories of glare are calculated using a typical observer's blink response time, ocular transmission coefficient (i.e., the amount of radiation absorbed in the eye prior to reaching the retina), pupil diameter, and eye focal length (i.e., the distance between where rays intersect in the eye and the retina). As a point of comparison, direct viewing of the sun without a filter is considered to be on the border between yellow glare and red glare, while typical camera flashes are considered to be lower tier yellow glare and approximately three orders of magnitude less than direct viewing of the sun. Upon exposure to yellow glare, the observer may experience a temporary spot in their vision after the exposure. Upon exposure to green glare, the observer may experience a bright reflection but typically no spot lasting after exposure.

Based on this background, Tetra Tech has used the SGHAT as licensed for use in ForgeSolar GlareGauge cloud software application for modeling and analysis. ForgeSolar GlareGauge with SGHAT modeling provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts.

The SGHAT was used to evaluate the potential for glint and glare for seven modeled photovoltaic (PV) arrays when 1) traveling along proximal segments Bowers Road, Coburg Road, Diamond Hill Road, Gap Road, Mt Tom Drive, Priceboro Drive, Albany-Jurisdiction City Hwy, Halsey-Sweet Home Hwy, and Interstate 5 (I-5); and 2) 40 nearby locations, designated as Observation Points (OPs) selected to represent observer views at nearby properties. The analysis reports are included as **Attachment A**.

The FAA Pre-Screening Tool allows the user to determine if a proposed structure would require a formal submission to the FAA under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace). This online tool was utilized to determine if the proposed Project would require formal filing to the FAA. Based on the results of the FAA Notice Criteria Tool, the Project does not exceed notice criteria; therefore, it is not required for the Project to be formally filed with the FAA Obstruction Evaluation Group. With the Project not needing to be filed with FAA and the nearest federally regulated airport located approximately 10 miles to the southwest (Eugene Airport - EUG), nearby flight paths and airports were not included in the analysis report. The FAA Pre-Screening Tool Report is included as **Attachment B**.

The panels to be used for the Project are anticipated to consist of smooth glass surface material without an anti-reflection coating (ARC), which is accounted for in the glare analysis. Two analyses were performed to simulate single-axis trackers (SAT) with an anticipated maximum panel tracking angle of 52° and a resting angle of 5°. The analyses were conducted for a panel height of 6.5 feet above ground surface (centroid height) with applicable panel specifications. The panel orientation, location, and specifications used in the analysis were based on information provided by the Client, dated April 17, 2026. The input features used in the analyses are summarized in Table 1 below. The analysis includes calculations to predict potential minutes of glare during the year at the following specified receptors:

- Viewing height of observer in standard vehicle at 3.5 feet above ground surface (Analysis 1);
- Viewing height of observer in typical semi-tractor-trailer truck at 7.5 feet above ground surface (Analysis 2);
- Viewing height of an observer on foot at 6 feet above ground surface (Analysis 1);
- Viewing height of an observer on foot in the second story of a building at 16 feet above ground surface (Analysis 2)

Table 1. Glare Analyses Input Features

Analysis No.	Racking Type	Module Orientation[1]	Tilt[2] (degrees)	Resting Angle[3] (degrees)	Module Height[4] (feet)	OP Height[5] (feet)	Route Height[6] (feet)
1	Single Axis Tracker	East-facing	±52	5	6.5	6	3.5
2	Single Axis Tracker	East-facing	±52	5	6.5	16	7.5

1. PV Array Areas modeled as single axis tracking modules from east-facing in the morning hours to west-facing in the evening hours.
2. The module tilt varies through the day as they track the sun, the maximum tracking angle tilt is ±52 degrees east/west.
3. Angle of rotation of panels when sun is outside tracking range. Used to model backtracking. Panels will revert to the position described by this rotation angle at all times when the sun is outside the rotation range defined by the tracking maximum.
4. Average module centroid height above ground surface.
5. Height of observation point receptor: 6 feet represents an average first floor residential/commercial point of view and 16 feet represents an average second floor residential/commercial point of view.
6. Height of vehicular route receptor: 3.5 feet represents typical commuter car height and 7.5 feet represents typical semi-tractor-trailer truck views.

GLARE ANALYSIS RESULTS

Analyses 1 – 1st Story Receptors

Analysis 1 analyzed seven PV Array Areas for 40 first-story receptors (OP-1 through OP-40) and nine proximal route receptors along segments of Bowers Road, Coburg Road, Diamond Hill Road, Gap Road, Mt Tom Drive, Priceboro Drive, Albany-Jurisdiction City Hwy, Halsey-Sweet Home Hwy, and I-5 from the height of a standard commuter vehicle. The SGHAT GlareGauge modeled the results for the Project (Attachment B). The simulation predicted that no glare would occur to the modeled receptors.

Analyses 2 – 2nd Story Receptors

Analysis 2 analyzed seven PV Array Areas for 40 second-story receptors and nine proximal route receptors along segments of Bowers Road, Coburg Road, Diamond Hill Road, Gap Road, Mt Tom Drive, Priceboro Drive, Albany-Jurisdiction City Hwy, Halsey-Sweet Home Hwy, and I-5 from the height of a typical tractor trailer. The

SGHAT GlareGauge modeled the results for the Project (Attachment B). The simulation predicted that no glare would occur to the modeled receptors.

SUMMARY

The Project Site layout was modeled on SGHAT GlareGauge in order to evaluate the potential extent of any glint and glare the proposed Project may have upon nearby points of observation and vehicle routes. Two analyses were performed: the analyses represented a single axis tracking system with 52° tilt and panel specifications of smooth glass with ARC. The analyses showed that no glare is predicted to the surrounding area based on the receptors used.

The GlareGauge model does not account for varying ambient conditions (i.e., cloudy days, precipitation), atmospheric attenuation, screening due to existing vegetation or structures unless specified through obstruction modeling, and screening due to existing topography not located within the defined array layout. The model assumes perfectly clear weather and no obstructions between the solar panels and the receptor unless modeled through the obstruction tool. As such, the predicted results are considered conservative and actual glare would be lower. Lastly, based on the results of the FAA Pre-Screening Tool, the Project does not exceed notice criteria; therefore, it is not required for the Project to be formally filed with the FAA Obstruction Evaluation Group.

REFERENCES

Ho, Clifford L. and Sims, Cianan. "Solar Glare Hazard Analysis Tool v. 4.0.", Jan. 2017.

Sandia Solar Glare Hazard Analysis Tool, GlareGauge hosted by ForgeSolar. Accessed online 4/20/2026 https://www.forgesolar.com/.

Attachment A

Glare Analysis Reports

FORGESOLAR GLARE ANALYSIS

Project: **Muddy Creek Project**
Site configuration: **Analysis 1-1st Story Receptors 04202026**
Calculated via ForgeSolar Radiometric Physics Engine v3.1.2

Created 22 Apr, 2026
Updated 30 Apr, 2026
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 100 MW to 1 GW
Site ID 176594.19026

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.229652	-123.057771	348.30	6.50	354.80
2	44.229731	-123.054584	347.78	6.50	354.28
3	44.230697	-123.054396	347.28	6.50	353.78
4	44.230982	-123.052339	345.16	6.50	351.66
5	44.229906	-123.052115	344.92	6.50	351.42
6	44.229858	-123.050812	346.24	6.50	352.74
7	44.228549	-123.050728	345.89	6.50	352.39
8	44.224702	-123.052244	347.75	6.50	354.25
9	44.224562	-123.055813	349.82	6.50	356.32
10	44.226039	-123.058084	349.29	6.50	355.79

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.241118	-123.054818	338.95	6.50	345.45
2	44.241159	-123.047667	339.41	6.50	345.91
3	44.237644	-123.047328	343.60	6.50	350.10
4	44.237522	-123.049232	342.59	6.50	349.09
5	44.235414	-123.049364	343.70	6.50	350.20
6	44.235171	-123.047591	342.87	6.50	349.37
7	44.232780	-123.047610	343.24	6.50	349.74
8	44.232552	-123.056449	347.25	6.50	353.75
9	44.233497	-123.056675	346.61	6.50	353.11
10	44.233633	-123.055827	346.20	6.50	352.70
11	44.238616	-123.056099	340.13	6.50	346.63
12	44.238765	-123.055080	341.19	6.50	347.69

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.227871	-123.039878	349.81	6.50	356.31
2	44.235698	-123.040151	344.66	6.50	351.16
3	44.235893	-123.033817	349.08	6.50	355.58
4	44.243148	-123.033721	338.65	6.50	345.15
5	44.243223	-123.034695	337.64	6.50	344.14
6	44.239183	-123.036818	340.80	6.50	347.30
7	44.238287	-123.038422	340.66	6.50	347.16
8	44.237292	-123.038523	342.51	6.50	349.01
9	44.237096	-123.042094	341.96	6.50	348.46
10	44.235462	-123.043187	342.23	6.50	348.73
11	44.233375	-123.043298	343.55	6.50	350.05
12	44.232963	-123.045972	343.59	6.50	350.09
13	44.228476	-123.045961	346.29	6.50	352.79
14	44.228522	-123.042601	347.75	6.50	354.25
15	44.227859	-123.042582	348.81	6.50	355.31

Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.241125	-123.043981	340.13	6.50	346.63
2	44.241155	-123.041084	340.25	6.50	346.75
3	44.238837	-123.040953	341.89	6.50	348.39
4	44.238743	-123.042742	343.06	6.50	349.56
5	44.237585	-123.042751	342.18	6.50	348.68
6	44.237544	-123.043831	342.76	6.50	349.26

Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.258036	-123.058443	329.93	6.50	336.43
2	44.258112	-123.052587	334.27	6.50	340.77
3	44.249992	-123.052489	335.93	6.50	342.43
4	44.248664	-123.052673	336.38	6.50	342.88
5	44.248520	-123.056256	335.23	6.50	341.73
6	44.250836	-123.057247	333.78	6.50	340.28
7	44.252075	-123.057415	332.84	6.50	339.34
8	44.252089	-123.058403	333.85	6.50	340.35

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.256764	-123.021237	342.00	6.50	348.50
2	44.256945	-123.016679	350.74	6.50	357.24
3	44.261627	-123.016429	356.29	6.50	362.79
4	44.261937	-123.007881	373.93	6.50	380.43
5	44.265451	-123.008140	372.14	6.50	378.64
6	44.265311	-123.021174	345.31	6.50	351.81

Name: PV array 7
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.255993	-123.023306	343.30	6.50	349.80
2	44.256136	-123.015939	350.80	6.50	357.30
3	44.251420	-123.015514	359.77	6.50	366.27
4	44.251434	-123.017687	358.37	6.50	364.87
5	44.252477	-123.017794	356.91	6.50	363.41
6	44.252494	-123.019613	355.09	6.50	361.59
7	44.253642	-123.019697	348.14	6.50	354.64
8	44.253564	-123.023281	347.42	6.50	353.92

Route Receptors

Name: Albany-Jurisdiction City Hwy
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.279123	-123.167295	312.21	3.50	315.71
2	44.290260	-123.153240	307.93	3.50	311.43
3	44.300318	-123.140666	306.53	3.50	310.03
4	44.311749	-123.126270	302.66	3.50	306.16
5	44.322821	-123.112316	301.22	3.50	304.72
6	44.324234	-123.110771	303.29	3.50	306.79
7	44.325247	-123.109892	302.59	3.50	306.09
8	44.326543	-123.109150	302.29	3.50	305.79
9	44.328422	-123.108458	301.39	3.50	304.89
10	44.329220	-123.108415	300.61	3.50	304.11
11	44.372049	-123.108371	292.11	3.50	295.61
12	44.374023	-123.108500	291.60	3.50	295.10
13	44.375894	-123.108929	289.22	3.50	292.72
14	44.378481	-123.109612	287.65	3.50	291.15

Name: Bowers Road
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.229060	-123.134108	335.68	3.50	339.18
2	44.228983	-123.133485	336.15	3.50	339.65
3	44.228960	-123.128228	335.48	3.50	338.98
4	44.228891	-123.119337	335.49	3.50	338.99
5	44.228829	-123.110740	339.57	3.50	343.07
6	44.228837	-123.102805	340.36	3.50	343.86
7	44.228889	-123.088625	344.13	3.50	347.63
8	44.228892	-123.083997	345.62	3.50	349.12
9	44.228823	-123.083407	346.27	3.50	349.77
10	44.228508	-123.082581	344.90	3.50	348.40
11	44.228277	-123.081927	347.21	3.50	350.71
12	44.228262	-123.080800	347.09	3.50	350.59
13	44.228346	-123.069037	345.48	3.50	348.98

Name: Coburg Road
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.261006	-123.162862	318.54	3.50	322.04
2	44.257340	-123.159364	319.76	3.50	323.26
3	44.254840	-123.156791	321.73	3.50	325.23
4	44.251564	-123.153230	322.85	3.50	326.35
5	44.247126	-123.148435	326.48	3.50	329.98
6	44.242952	-123.144029	328.09	3.50	331.59
7	44.239838	-123.140810	329.97	3.50	333.47
8	44.239323	-123.140381	330.49	3.50	333.99
9	44.229015	-123.134168	336.02	3.50	339.52
10	44.218144	-123.128731	340.67	3.50	344.17
11	44.215786	-123.127722	341.09	3.50	344.59
12	44.214641	-123.127114	341.70	3.50	345.20
13	44.213103	-123.125924	342.14	3.50	345.64
14	44.211868	-123.125233	343.42	3.50	346.92
15	44.210906	-123.125094	342.39	3.50	345.89
16	44.210047	-123.125036	344.19	3.50	347.69
17	44.207162	-123.125616	344.65	3.50	348.15
18	44.203855	-123.126299	346.59	3.50	350.09
19	44.200278	-123.127621	348.81	3.50	352.31
20	44.199386	-123.127803	349.39	3.50	352.89
21	44.198832	-123.127717	349.42	3.50	352.92
22	44.196440	-123.126863	351.14	3.50	354.64
23	44.193611	-123.124916	353.33	3.50	356.83
24	44.192719	-123.123597	353.48	3.50	356.98
25	44.188110	-123.121667	356.09	3.50	359.59

Name: Diamond Hill Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.279749	-123.098551	321.09	3.50	324.59
2	44.279825	-123.083735	320.83	3.50	324.33
3	44.280033	-123.071065	321.77	3.50	325.27
4	44.280117	-123.062103	341.46	3.50	344.96
5	44.280148	-123.058616	328.82	3.50	332.32
6	44.280148	-123.054582	323.26	3.50	326.76
7	44.280272	-123.029839	343.52	3.50	347.02
8	44.280295	-123.026996	347.60	3.50	351.10
9	44.280424	-123.026094	349.13	3.50	352.63
10	44.280824	-123.023680	352.96	3.50	356.46
11	44.280885	-123.022746	354.44	3.50	357.94
12	44.280962	-123.007633	386.81	3.50	390.31
13	44.281148	-123.006819	389.03	3.50	392.53
14	44.281450	-123.005671	393.99	3.50	397.49
15	44.281461	-123.004851	396.02	3.50	399.52
16	44.281435	-123.001235	404.45	3.50	407.95
17	44.281455	-123.000720	405.51	3.50	409.01
18	44.281582	-122.999819	409.01	3.50	412.51
19	44.281843	-122.998285	415.35	3.50	418.85
20	44.281856	-122.997540	419.09	3.50	422.59
21	44.281812	-122.996850	425.53	3.50	429.03
22	44.281551	-122.995601	433.22	3.50	436.72
23	44.281509	-122.995212	433.68	3.50	437.18
24	44.281568	-122.994976	432.72	3.50	436.22
25	44.281734	-122.994654	432.42	3.50	435.92
26	44.281966	-122.994520	431.25	3.50	434.75
27	44.283348	-122.994668	429.50	3.50	433.00

Name: Gap Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.243330	-123.009914	411.66	3.50	415.16
2	44.243491	-123.009576	413.22	3.50	416.72
3	44.243783	-123.009389	413.72	3.50	417.22
4	44.244544	-123.009399	409.78	3.50	413.28
5	44.250069	-123.009438	393.51	3.50	397.01
6	44.255225	-123.009482	368.06	3.50	371.56
7	44.256035	-123.009488	365.51	3.50	369.01
8	44.256277	-123.009236	365.43	3.50	368.93
9	44.256430	-123.008812	365.06	3.50	368.56
10	44.256411	-123.006801	369.31	3.50	372.81
11	44.256473	-123.006458	370.49	3.50	373.99
12	44.256661	-123.006158	370.89	3.50	374.39
13	44.256965	-123.005981	369.61	3.50	373.11
14	44.258013	-123.006002	368.48	3.50	371.98
15	44.262067	-123.005973	380.83	3.50	384.33
16	44.265995	-123.005927	379.23	3.50	382.73
17	44.266710	-123.006072	372.13	3.50	375.63
18	44.267563	-123.006356	365.42	3.50	368.92
19	44.268212	-123.006373	365.55	3.50	369.05
20	44.281282	-123.006325	391.27	3.50	394.77

Name: Halsey-Sweet Home Hwy
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.389019	-123.106208	284.80	3.50	288.30
2	44.388896	-123.077941	285.92	3.50	289.42
3	44.388865	-123.054308	286.92	3.50	290.42
4	44.388758	-123.025682	304.67	3.50	308.17

Name: I-5
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.118281	-123.046874	433.65	3.50	437.15
2	44.135364	-123.051298	409.63	3.50	413.13
3	44.149333	-123.054870	398.45	3.50	401.95
4	44.165713	-123.059022	388.04	3.50	391.54
5	44.170284	-123.060116	386.06	3.50	389.56
6	44.172797	-123.060374	384.71	3.50	388.21
7	44.198682	-123.060460	372.56	3.50	376.06
8	44.226135	-123.060581	347.03	3.50	350.53
9	44.251589	-123.060675	337.88	3.50	341.38
10	44.280119	-123.060691	324.27	3.50	327.77
11	44.319051	-123.060869	322.31	3.50	325.81
12	44.353006	-123.060985	307.71	3.50	311.21
13	44.388860	-123.061122	292.06	3.50	295.56
14	44.392348	-123.061098	291.03	3.50	294.53

Name: Mt Tom Dr
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.208755	-123.060226	362.30	3.50	365.80
2	44.214301	-123.060236	357.61	3.50	361.11
3	44.214463	-123.060226	357.28	3.50	360.78
4	44.214563	-123.060000	357.24	3.50	360.74
5	44.214547	-123.057050	356.94	3.50	360.44
6	44.214586	-123.049990	357.41	3.50	360.91
7	44.214601	-123.044146	382.58	3.50	386.08
8	44.214600	-123.039546	406.98	3.50	410.48
9	44.214393	-123.038945	422.62	3.50	426.12
10	44.213870	-123.037625	465.77	3.50	469.27
11	44.213478	-123.036638	487.70	3.50	491.20
12	44.213101	-123.036080	496.82	3.50	500.32
13	44.212616	-123.035501	508.64	3.50	512.14
14	44.212247	-123.034954	519.74	3.50	523.24
15	44.212109	-123.034567	526.25	3.50	529.75
16	44.211717	-123.032507	548.80	3.50	552.30
17	44.211603	-123.031295	557.79	3.50	561.29
18	44.211618	-123.030330	564.23	3.50	567.73

Name: Priceboro Dr
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.243319	-123.009978	411.19	3.50	414.69
2	44.243288	-123.010700	403.81	3.50	407.31
3	44.243314	-123.013103	389.70	3.50	393.20
4	44.243343	-123.017063	376.64	3.50	380.14
5	44.243397	-123.024010	349.32	3.50	352.82
6	44.243466	-123.033922	339.32	3.50	342.82
7	44.243475	-123.036049	340.11	3.50	343.61
8	44.243540	-123.036386	339.74	3.50	343.24
9	44.243725	-123.036676	340.49	3.50	343.99
10	44.243963	-123.036751	339.65	3.50	343.15
11	44.244551	-123.036745	339.07	3.50	342.57
12	44.245948	-123.036753	338.40	3.50	341.90
13	44.246320	-123.037035	337.15	3.50	340.65
14	44.247072	-123.037741	336.37	3.50	339.87
15	44.248274	-123.038850	337.14	3.50	340.64
16	44.248337	-123.039006	337.10	3.50	340.60
17	44.248350	-123.045285	335.54	3.50	339.04
18	44.248350	-123.054996	336.62	3.50	340.12
19	44.248362	-123.056909	336.61	3.50	340.11
20	44.248456	-123.057276	337.57	3.50	341.07
21	44.248760	-123.057528	336.87	3.50	340.37
22	44.250663	-123.057550	338.45	3.50	341.95
23	44.250978	-123.057949	339.06	3.50	342.56
24	44.251020	-123.058489	341.10	3.50	344.60
25	44.250974	-123.065923	333.90	3.50	337.40
26	44.250678	-123.087520	333.76	3.50	337.26
27	44.250635	-123.097117	334.05	3.50	337.55
28	44.250812	-123.097648	335.74	3.50	339.24
29	44.251289	-123.098007	335.43	3.50	338.93

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	44.143115	-123.072279	396.87	6.00
OP 2	2	44.141622	-123.062688	398.18	6.00
OP 3	3	44.188990	-123.147063	334.20	6.00
OP 4	4	44.188971	-123.141382	343.97	6.00
OP 5	5	44.271667	-123.172833	314.41	6.00
OP 6	6	44.267117	-123.173711	318.03	6.00
OP 7	7	44.263394	-123.154622	318.44	6.00
OP 8	8	44.388542	-123.025827	303.90	6.00
OP 9	9	44.283423	-123.023213	352.98	6.00
OP 10	10	44.261088	-123.067182	332.30	6.00
OP 11	11	44.241326	-123.069640	343.23	6.00
OP 12	12	44.222268	-123.067804	350.52	6.00
OP 13	13	44.242885	-123.018342	372.38	6.00
OP 14	14	44.251851	-123.007772	390.01	6.00
OP 15	15	44.273595	-123.000347	452.21	6.00
OP 16	16	44.294110	-123.079295	315.69	6.00
OP 17	17	44.261069	-123.108460	327.51	6.00
OP 18	18	44.229034	-123.114196	340.40	6.00
OP 19	19	44.195879	-123.095150	358.10	6.00
OP 20	20	44.192259	-123.103247	358.28	6.00
OP 21	21	44.157001	-123.068880	387.26	6.00
OP 22	22	44.214170	-123.049954	357.55	6.00
OP 23	23	44.215118	-123.038280	412.19	6.00
OP 24	24	44.213210	-123.038677	484.48	6.00
OP 25	25	44.212360	-123.036371	535.40	6.00
OP 26	26	44.212486	-123.034069	529.12	6.00
OP 27	27	44.235531	-123.017431	486.75	6.00
OP 28	28	44.245867	-123.002988	476.45	6.00
OP 29	29	44.260099	-123.005650	378.68	6.00
OP 30	30	44.266112	-123.064883	327.66	6.00
OP 31	31	44.246128	-123.040172	341.32	6.00
OP 32	32	44.248005	-123.038104	336.24	6.00
OP 33	33	44.248189	-123.044590	337.55	6.00
OP 34	34	44.249974	-123.059324	336.83	6.00
OP 35	35	44.250585	-123.073122	338.07	6.00
OP 36	36	44.214304	-123.062650	356.31	6.00
OP 37	37	44.214344	-123.068483	352.44	6.00
OP 38	38	44.269383	-123.158082	317.25	6.00
OP 39	39	44.272655	-123.157621	316.33	6.00
OP 40	40	44.274627	-123.156168	315.33	6.00

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 1 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 1 and Route: Bowers Road

No glare found

PV array 1 and Route: Coburg Road

No glare found

PV array 1 and Route: Diamond Hill Rd

No glare found

PV array 1 and Route: Gap Rd

No glare found

PV array 1 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 1 and Route: I-5

No glare found

PV array 1 and Route: Mt Tom Dr

No glare found

PV array 1 and Route: Priceboro Dr

No glare found

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV array 1 and OP 18

No glare found

PV array 1 and OP 19

No glare found

PV array 1 and OP 20

No glare found

PV array 1 and OP 21

No glare found

PV array 1 and OP 22

No glare found

PV array 1 and OP 23

No glare found

PV array 1 and OP 24

No glare found

PV array 1 and OP 25

No glare found

PV array 1 and OP 26

No glare found

PV array 1 and OP 27

No glare found

PV array 1 and OP 28

No glare found

PV array 1 and OP 29

No glare found

PV array 1 and OP 30

No glare found

PV array 1 and OP 31

No glare found

PV array 1 and OP 32

No glare found

PV array 1 and OP 33

No glare found

PV array 1 and OP 34

No glare found

PV array 1 and OP 35

No glare found

PV array 1 and OP 36

No glare found

PV array 1 and OP 37

No glare found

PV array 1 and OP 38

No glare found

PV array 1 and OP 39

No glare found

PV array 1 and OP 40

No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 2 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 2 and Route: Bowers Road

No glare found

PV array 2 and Route: Coburg Road

No glare found

PV array 2 and Route: Diamond Hill Rd

No glare found

PV array 2 and Route: Gap Rd

No glare found

PV array 2 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 2 and Route: I-5

No glare found

PV array 2 and Route: Mt Tom Dr

No glare found

PV array 2 and Route: Priceboro Dr

No glare found

PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 8

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV array 2 and OP 14

No glare found

PV array 2 and OP 15

No glare found

PV array 2 and OP 16

No glare found

PV array 2 and OP 17

No glare found

PV array 2 and OP 18

No glare found

PV array 2 and OP 19

No glare found

PV array 2 and OP 20

No glare found

PV array 2 and OP 21

No glare found

PV array 2 and OP 22

No glare found

PV array 2 and OP 23

No glare found

PV array 2 and OP 24

No glare found

PV array 2 and OP 25

No glare found

PV array 2 and OP 26

No glare found

PV array 2 and OP 27

No glare found

PV array 2 and OP 28

No glare found

PV array 2 and OP 29

No glare found

PV array 2 and OP 30

No glare found

PV array 2 and OP 31

No glare found

PV array 2 and OP 32

No glare found

PV array 2 and OP 33

No glare found

PV array 2 and OP 34

No glare found

PV array 2 and OP 35

No glare found

PV array 2 and OP 36

No glare found

PV array 2 and OP 37

No glare found

PV array 2 and OP 38

No glare found

PV array 2 and OP 39

No glare found

PV array 2 and OP 40

No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 3 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 3 and Route: Bowers Road

No glare found

PV array 3 and Route: Coburg Road

No glare found

PV array 3 and Route: Diamond Hill Rd

No glare found

PV array 3 and Route: Gap Rd

No glare found

PV array 3 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 3 and Route: I-5

No glare found

PV array 3 and Route: Mt Tom Dr

No glare found

PV array 3 and Route: Priceboro Dr

No glare found

PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 3

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 5

No glare found

PV array 3 and OP 6

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV array 3 and OP 14

No glare found

PV array 3 and OP 15

No glare found

PV array 3 and OP 16

No glare found

PV array 3 and OP 17

No glare found

PV array 3 and OP 18

No glare found

PV array 3 and OP 19

No glare found

PV array 3 and OP 20

No glare found

PV array 3 and OP 21

No glare found

PV array 3 and OP 22

No glare found

PV array 3 and OP 23

No glare found

PV array 3 and OP 24

No glare found

PV array 3 and OP 25

No glare found

PV array 3 and OP 26

No glare found

PV array 3 and OP 27

No glare found

PV array 3 and OP 28

No glare found

PV array 3 and OP 29

No glare found

PV array 3 and OP 30

No glare found

PV array 3 and OP 31

No glare found

PV array 3 and OP 32

No glare found

PV array 3 and OP 33

No glare found

PV array 3 and OP 34

No glare found

PV array 3 and OP 35

No glare found

PV array 3 and OP 36

No glare found

PV array 3 and OP 37

No glare found

PV array 3 and OP 38

No glare found

PV array 3 and OP 39

No glare found

PV array 3 and OP 40

No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 4 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 4 and Route: Bowers Road

No glare found

PV array 4 and Route: Coburg Road

No glare found

PV array 4 and Route: Diamond Hill Rd

No glare found

PV array 4 and Route: Gap Rd

No glare found

PV array 4 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 4 and Route: I-5

No glare found

PV array 4 and Route: Mt Tom Dr

No glare found

PV array 4 and Route: Priceboro Dr

No glare found

PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 4

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 7

No glare found

PV array 4 and OP 8

No glare found

PV array 4 and OP 9

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

PV array 4 and OP 14

No glare found

PV array 4 and OP 15

No glare found

PV array 4 and OP 16

No glare found

PV array 4 and OP 17

No glare found

PV array 4 and OP 18

No glare found

PV array 4 and OP 19

No glare found

PV array 4 and OP 20

No glare found

PV array 4 and OP 21

No glare found

PV array 4 and OP 22

No glare found

PV array 4 and OP 23

No glare found

PV array 4 and OP 24

No glare found

PV array 4 and OP 25

No glare found

PV array 4 and OP 26

No glare found

PV array 4 and OP 27

No glare found

PV array 4 and OP 28

No glare found

PV array 4 and OP 29

No glare found

PV array 4 and OP 30

No glare found

PV array 4 and OP 31

No glare found

PV array 4 and OP 32

No glare found

PV array 4 and OP 33

No glare found

PV array 4 and OP 34

No glare found

PV array 4 and OP 35

No glare found

PV array 4 and OP 36

No glare found

PV array 4 and OP 37

No glare found

PV array 4 and OP 38

No glare found

PV array 4 and OP 39

No glare found

PV array 4 and OP 40

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 5 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 5 and Route: Bowers Road

No glare found

PV array 5 and Route: Coburg Road

No glare found

PV array 5 and Route: Diamond Hill Rd

No glare found

PV array 5 and Route: Gap Rd

No glare found

PV array 5 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 5 and Route: I-5

No glare found

PV array 5 and Route: Mt Tom Dr

No glare found

PV array 5 and Route: Priceboro Dr

No glare found

PV array 5 and OP 1

No glare found

PV array 5 and OP 2

No glare found

PV array 5 and OP 3

No glare found

PV array 5 and OP 4

No glare found

PV array 5 and OP 5

No glare found

PV array 5 and OP 6

No glare found

PV array 5 and OP 7

No glare found

PV array 5 and OP 8

No glare found

PV array 5 and OP 9

No glare found

PV array 5 and OP 10

No glare found

PV array 5 and OP 11

No glare found

PV array 5 and OP 12

No glare found

PV array 5 and OP 13

No glare found

PV array 5 and OP 14

No glare found

PV array 5 and OP 15

No glare found

PV array 5 and OP 16

No glare found

PV array 5 and OP 17

No glare found

PV array 5 and OP 18

No glare found

PV array 5 and OP 19

No glare found

PV array 5 and OP 20

No glare found

PV array 5 and OP 21

No glare found

PV array 5 and OP 22

No glare found

PV array 5 and OP 23

No glare found

PV array 5 and OP 24

No glare found

PV array 5 and OP 25

No glare found

PV array 5 and OP 26

No glare found

PV array 5 and OP 27

No glare found

PV array 5 and OP 28

No glare found

PV array 5 and OP 29

No glare found

PV array 5 and OP 30

No glare found

PV array 5 and OP 31

No glare found

PV array 5 and OP 32

No glare found

PV array 5 and OP 33

No glare found

PV array 5 and OP 34

No glare found

PV array 5 and OP 35

No glare found

PV array 5 and OP 36

No glare found

PV array 5 and OP 37

No glare found

PV array 5 and OP 38

No glare found

PV array 5 and OP 39

No glare found

PV array 5 and OP 40

No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 6 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 6 and Route: Bowers Road

No glare found

PV array 6 and Route: Coburg Road

No glare found

PV array 6 and Route: Diamond Hill Rd

No glare found

PV array 6 and Route: Gap Rd

No glare found

PV array 6 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 6 and Route: I-5

No glare found

PV array 6 and Route: Mt Tom Dr

No glare found

PV array 6 and Route: Priceboro Dr

No glare found

PV array 6 and OP 1

No glare found

PV array 6 and OP 2

No glare found

PV array 6 and OP 3

No glare found

PV array 6 and OP 4

No glare found

PV array 6 and OP 5

No glare found

PV array 6 and OP 6

No glare found

PV array 6 and OP 7

No glare found

PV array 6 and OP 8

No glare found

PV array 6 and OP 9

No glare found

PV array 6 and OP 10

No glare found

PV array 6 and OP 11

No glare found

PV array 6 and OP 12

No glare found

PV array 6 and OP 13

No glare found

PV array 6 and OP 14

No glare found

PV array 6 and OP 15

No glare found

PV array 6 and OP 16

No glare found

PV array 6 and OP 17

No glare found

PV array 6 and OP 18

No glare found

PV array 6 and OP 19

No glare found

PV array 6 and OP 20

No glare found

PV array 6 and OP 21

No glare found

PV array 6 and OP 22

No glare found

PV array 6 and OP 23

No glare found

PV array 6 and OP 24

No glare found

PV array 6 and OP 25

No glare found

PV array 6 and OP 26

No glare found

PV array 6 and OP 27

No glare found

PV array 6 and OP 28

No glare found

PV array 6 and OP 29

No glare found

PV array 6 and OP 30

No glare found

PV array 6 and OP 31

No glare found

PV array 6 and OP 32

No glare found

PV array 6 and OP 33

No glare found

PV array 6 and OP 34

No glare found

PV array 6 and OP 35

No glare found

PV array 6 and OP 36

No glare found

PV array 6 and OP 37

No glare found

PV array 6 and OP 38

No glare found

PV array 6 and OP 39

No glare found

PV array 6 and OP 40

No glare found

PV: PV array 7 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 7 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 7 and Route: Bowers Road

No glare found

PV array 7 and Route: Coburg Road

No glare found

PV array 7 and Route: Diamond Hill Rd

No glare found

PV array 7 and Route: Gap Rd

No glare found

PV array 7 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 7 and Route: I-5

No glare found

PV array 7 and Route: Mt Tom Dr

No glare found

PV array 7 and Route: Priceboro Dr

No glare found

PV array 7 and OP 1

No glare found

PV array 7 and OP 2

No glare found

PV array 7 and OP 3

No glare found

PV array 7 and OP 4

No glare found

PV array 7 and OP 5

No glare found

PV array 7 and OP 6

No glare found

PV array 7 and OP 7

No glare found

PV array 7 and OP 8

No glare found

PV array 7 and OP 9

No glare found

PV array 7 and OP 10

No glare found

PV array 7 and OP 11

No glare found

PV array 7 and OP 12

No glare found

PV array 7 and OP 13

No glare found

PV array 7 and OP 14

No glare found

PV array 7 and OP 15

No glare found

PV array 7 and OP 16

No glare found

PV array 7 and OP 17

No glare found

PV array 7 and OP 18

No glare found

PV array 7 and OP 19

No glare found

PV array 7 and OP 20

No glare found

PV array 7 and OP 21

No glare found

PV array 7 and OP 22

No glare found

PV array 7 and OP 23

No glare found

PV array 7 and OP 24

No glare found

PV array 7 and OP 25

No glare found

PV array 7 and OP 26

No glare found

PV array 7 and OP 27

No glare found

PV array 7 and OP 28

No glare found

PV array 7 and OP 29

No glare found

PV array 7 and OP 30

No glare found

PV array 7 and OP 31

No glare found

PV array 7 and OP 32

No glare found

PV array 7 and OP 33

No glare found

PV array 7 and OP 34

No glare found

PV array 7 and OP 35

No glare found

PV array 7 and OP 36

No glare found

PV array 7 and OP 37

No glare found

PV array 7 and OP 38

No glare found

PV array 7 and OP 39

No glare found

PV array 7 and OP 40

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

© 2026 Sims Industries d/b/a ForgeSolar, All Rights Reserved.

This analysis was conducted using the best available radiometric modeling at the time of generation. Future updates to the modeling methodology may yield different results.

FORGESOLAR GLARE ANALYSIS

Project: **Muddy Creek Project**
Site configuration: **Analysis 2-2nd Story Receptors 04202026**
Calculated via ForgeSolar Radiometric Physics Engine v3.1.2

Created 22 Apr, 2026
Updated 30 Apr, 2026
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 100 MW to 1 GW
Site ID 176650.19026

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.229652	-123.057771	348.30	6.50	354.80
2	44.229731	-123.054584	347.78	6.50	354.28
3	44.230697	-123.054396	347.28	6.50	353.78
4	44.230982	-123.052339	345.16	6.50	351.66
5	44.229906	-123.052115	344.92	6.50	351.42
6	44.229858	-123.050812	346.24	6.50	352.74
7	44.228549	-123.050728	345.89	6.50	352.39
8	44.224702	-123.052244	347.75	6.50	354.25
9	44.224562	-123.055813	349.82	6.50	356.32
10	44.226039	-123.058084	349.29	6.50	355.79

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.241118	-123.054818	338.95	6.50	345.45
2	44.241159	-123.047667	339.41	6.50	345.91
3	44.237644	-123.047328	343.60	6.50	350.10
4	44.237522	-123.049232	342.59	6.50	349.09
5	44.235414	-123.049364	343.70	6.50	350.20
6	44.235171	-123.047591	342.87	6.50	349.37
7	44.232780	-123.047610	343.24	6.50	349.74
8	44.232552	-123.056449	347.25	6.50	353.75
9	44.233497	-123.056675	346.61	6.50	353.11
10	44.233633	-123.055827	346.20	6.50	352.70
11	44.238616	-123.056099	340.13	6.50	346.63
12	44.238765	-123.055080	341.19	6.50	347.69

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.227871	-123.039878	349.81	6.50	356.31
2	44.235698	-123.040151	344.66	6.50	351.16
3	44.235893	-123.033817	349.08	6.50	355.58
4	44.243148	-123.033721	338.65	6.50	345.15
5	44.243223	-123.034695	337.64	6.50	344.14
6	44.239183	-123.036818	340.80	6.50	347.30
7	44.238287	-123.038422	340.66	6.50	347.16
8	44.237292	-123.038523	342.51	6.50	349.01
9	44.237096	-123.042094	341.96	6.50	348.46
10	44.235462	-123.043187	342.23	6.50	348.73
11	44.233375	-123.043298	343.55	6.50	350.05
12	44.232963	-123.045972	343.59	6.50	350.09
13	44.228476	-123.045961	346.29	6.50	352.79
14	44.228522	-123.042601	347.75	6.50	354.25
15	44.227859	-123.042582	348.81	6.50	355.31

Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.241125	-123.043981	340.13	6.50	346.63
2	44.241155	-123.041084	340.25	6.50	346.75
3	44.238837	-123.040953	341.89	6.50	348.39
4	44.238743	-123.042742	343.06	6.50	349.56
5	44.237585	-123.042751	342.18	6.50	348.68
6	44.237544	-123.043831	342.76	6.50	349.26

Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.258036	-123.058443	329.93	6.50	336.43
2	44.258112	-123.052587	334.27	6.50	340.77
3	44.249992	-123.052489	335.93	6.50	342.43
4	44.248664	-123.052673	336.38	6.50	342.88
5	44.248520	-123.056256	335.23	6.50	341.73
6	44.250836	-123.057247	333.78	6.50	340.28
7	44.252075	-123.057415	332.84	6.50	339.34
8	44.252089	-123.058403	333.85	6.50	340.35

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.256764	-123.021237	342.00	6.50	348.50
2	44.256945	-123.016679	350.74	6.50	357.24
3	44.261627	-123.016429	356.29	6.50	362.79
4	44.261937	-123.007881	373.93	6.50	380.43
5	44.265451	-123.008140	372.14	6.50	378.64
6	44.265311	-123.021174	345.31	6.50	351.81

Name: PV array 7
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.3
Rated power: -
Panel material: Smooth glass with AR coating



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.255993	-123.023306	343.30	6.50	349.80
2	44.256136	-123.015939	350.80	6.50	357.30
3	44.251420	-123.015514	359.77	6.50	366.27
4	44.251434	-123.017687	358.37	6.50	364.87
5	44.252477	-123.017794	356.91	6.50	363.41
6	44.252494	-123.019613	355.09	6.50	361.59
7	44.253642	-123.019697	348.14	6.50	354.64
8	44.253564	-123.023281	347.42	6.50	353.92

Route Receptors

Name: Albany-Jurisdiction City Hwy
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.279123	-123.167295	312.21	7.50	319.71
2	44.290260	-123.153240	307.93	7.50	315.43
3	44.300318	-123.140666	306.53	7.50	314.03
4	44.311749	-123.126270	302.66	7.50	310.16
5	44.322821	-123.112316	301.22	7.50	308.72
6	44.324234	-123.110771	303.29	7.50	310.79
7	44.325247	-123.109892	302.59	7.50	310.09
8	44.326543	-123.109150	302.29	7.50	309.79
9	44.328422	-123.108458	301.39	7.50	308.89
10	44.329220	-123.108415	300.61	7.50	308.11
11	44.372049	-123.108371	292.11	7.50	299.61
12	44.374023	-123.108500	291.60	7.50	299.10
13	44.375894	-123.108929	289.22	7.50	296.72
14	44.378481	-123.109612	287.65	7.50	295.15

Name: Bowers Road
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.229060	-123.134108	335.68	7.50	343.18
2	44.228983	-123.133485	336.15	7.50	343.65
3	44.228960	-123.128228	335.48	7.50	342.98
4	44.228891	-123.119337	335.49	7.50	342.99
5	44.228829	-123.110740	339.57	7.50	347.07
6	44.228837	-123.102805	340.36	7.50	347.86
7	44.228889	-123.088625	344.13	7.50	351.63
8	44.228892	-123.083997	345.62	7.50	353.12
9	44.228823	-123.083407	346.27	7.50	353.77
10	44.228508	-123.082581	344.90	7.50	352.40
11	44.228277	-123.081927	347.21	7.50	354.71
12	44.228262	-123.080800	347.09	7.50	354.59
13	44.228346	-123.069037	345.48	7.50	352.98

Name: Coburg Road
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.261006	-123.162862	318.54	7.50	326.04
2	44.257340	-123.159364	319.76	7.50	327.26
3	44.254840	-123.156791	321.73	7.50	329.23
4	44.251564	-123.153230	322.85	7.50	330.35
5	44.247126	-123.148435	326.48	7.50	333.98
6	44.242952	-123.144029	328.09	7.50	335.59
7	44.239838	-123.140810	329.97	7.50	337.47
8	44.239323	-123.140381	330.49	7.50	337.99
9	44.229015	-123.134168	336.02	7.50	343.52
10	44.218144	-123.128731	340.67	7.50	348.17
11	44.215786	-123.127722	341.09	7.50	348.59
12	44.214641	-123.127114	341.70	7.50	349.20
13	44.213103	-123.125924	342.14	7.50	349.64
14	44.211868	-123.125233	343.42	7.50	350.92
15	44.210906	-123.125094	342.39	7.50	349.89
16	44.210047	-123.125036	344.19	7.50	351.69
17	44.207162	-123.125616	344.65	7.50	352.15
18	44.203855	-123.126299	346.59	7.50	354.09
19	44.200278	-123.127621	348.81	7.50	356.31
20	44.199386	-123.127803	349.39	7.50	356.89
21	44.198832	-123.127717	349.42	7.50	356.92
22	44.196440	-123.126863	351.14	7.50	358.64
23	44.193611	-123.124916	353.33	7.50	360.83
24	44.192719	-123.123597	353.48	7.50	360.98
25	44.188110	-123.121667	356.09	7.50	363.59

Name: Diamond Hill Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.279749	-123.098551	321.09	7.50	328.59
2	44.279825	-123.083735	320.83	7.50	328.33
3	44.280033	-123.071065	321.77	7.50	329.27
4	44.280117	-123.062103	341.46	7.50	348.96
5	44.280148	-123.058616	328.82	7.50	336.32
6	44.280148	-123.054582	323.26	7.50	330.76
7	44.280272	-123.029839	343.52	7.50	351.02
8	44.280295	-123.026996	347.60	7.50	355.10
9	44.280424	-123.026094	349.13	7.50	356.63
10	44.280824	-123.023680	352.96	7.50	360.46
11	44.280885	-123.022746	354.44	7.50	361.94
12	44.280962	-123.007633	386.81	7.50	394.31
13	44.281148	-123.006819	389.03	7.50	396.53
14	44.281450	-123.005671	393.99	7.50	401.49
15	44.281461	-123.004851	396.02	7.50	403.52
16	44.281435	-123.001235	404.45	7.50	411.95
17	44.281455	-123.000720	405.51	7.50	413.01
18	44.281582	-122.999819	409.01	7.50	416.51
19	44.281843	-122.998285	415.35	7.50	422.85
20	44.281856	-122.997540	419.09	7.50	426.59
21	44.281812	-122.996850	425.53	7.50	433.03
22	44.281551	-122.995601	433.22	7.50	440.72
23	44.281509	-122.995212	433.68	7.50	441.18
24	44.281568	-122.994976	432.72	7.50	440.22
25	44.281734	-122.994654	432.42	7.50	439.92
26	44.281966	-122.994520	431.25	7.50	438.75
27	44.283348	-122.994668	429.50	7.50	437.00

Name: Gap Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 90.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.243330	-123.009914	411.66	7.50	419.16
2	44.243491	-123.009576	413.22	7.50	420.72
3	44.243783	-123.009389	413.72	7.50	421.22
4	44.244544	-123.009399	409.78	7.50	417.28
5	44.250069	-123.009438	393.51	7.50	401.01
6	44.255225	-123.009482	368.06	7.50	375.56
7	44.256035	-123.009488	365.51	7.50	373.01
8	44.256277	-123.009236	365.43	7.50	372.93
9	44.256430	-123.008812	365.06	7.50	372.56
10	44.256411	-123.006801	369.31	7.50	376.81
11	44.256473	-123.006458	370.49	7.50	377.99
12	44.256661	-123.006158	370.89	7.50	378.39
13	44.256965	-123.005981	369.61	7.50	377.11
14	44.258013	-123.006002	368.48	7.50	375.98
15	44.262067	-123.005973	380.83	7.50	388.33
16	44.265995	-123.005927	379.23	7.50	386.73
17	44.266710	-123.006072	372.13	7.50	379.63
18	44.267563	-123.006356	365.42	7.50	372.92
19	44.268212	-123.006373	365.55	7.50	373.05
20	44.281282	-123.006325	391.27	7.50	398.77

Name: Halsey-Sweet Home Hwy
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.389019	-123.106208	284.80	7.50	292.30
2	44.388896	-123.077941	285.92	7.50	293.42
3	44.388865	-123.054308	286.92	7.50	294.42
4	44.388758	-123.025682	304.67	7.50	312.17

Name: I-5
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.118281	-123.046874	433.65	7.50	441.15
2	44.135364	-123.051298	409.63	7.50	417.13
3	44.149333	-123.054870	398.45	7.50	405.95
4	44.165713	-123.059022	388.04	7.50	395.54
5	44.170284	-123.060116	386.06	7.50	393.56
6	44.172797	-123.060374	384.71	7.50	392.21
7	44.198682	-123.060460	372.56	7.50	380.06
8	44.226135	-123.060581	347.03	7.50	354.53
9	44.251589	-123.060675	337.88	7.50	345.38
10	44.280119	-123.060691	324.27	7.50	331.77
11	44.319051	-123.060869	322.31	7.50	329.81
12	44.353006	-123.060985	307.71	7.50	315.21
13	44.388860	-123.061122	292.06	7.50	299.56
14	44.392348	-123.061098	291.03	7.50	298.53

Name: Mt Tom Dr
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.208755	-123.060226	362.30	7.50	369.80
2	44.214301	-123.060236	357.61	7.50	365.11
3	44.214463	-123.060226	357.28	7.50	364.78
4	44.214563	-123.060000	357.24	7.50	364.74
5	44.214547	-123.057050	356.94	7.50	364.44
6	44.214586	-123.049990	357.41	7.50	364.91
7	44.214601	-123.044146	382.58	7.50	390.08
8	44.214600	-123.039546	406.98	7.50	414.48
9	44.214393	-123.038945	422.62	7.50	430.12
10	44.213870	-123.037625	465.77	7.50	473.27
11	44.213478	-123.036638	487.70	7.50	495.20
12	44.213101	-123.036080	496.82	7.50	504.32
13	44.212616	-123.035501	508.64	7.50	516.14
14	44.212247	-123.034954	519.74	7.50	527.24
15	44.212109	-123.034567	526.25	7.50	533.75
16	44.211717	-123.032507	548.80	7.50	556.30
17	44.211603	-123.031295	557.79	7.50	565.29
18	44.211618	-123.030330	564.23	7.50	571.73

Name: Priceboro Dr
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.243319	-123.009978	411.19	7.50	418.69
2	44.243288	-123.010700	403.81	7.50	411.31
3	44.243314	-123.013103	389.70	7.50	397.20
4	44.243343	-123.017063	376.64	7.50	384.14
5	44.243397	-123.024010	349.32	7.50	356.82
6	44.243466	-123.033922	339.32	7.50	346.82
7	44.243475	-123.036049	340.11	7.50	347.61
8	44.243540	-123.036386	339.74	7.50	347.24
9	44.243725	-123.036676	340.49	7.50	347.99
10	44.243963	-123.036751	339.65	7.50	347.15
11	44.244551	-123.036745	339.07	7.50	346.57
12	44.245948	-123.036753	338.40	7.50	345.90
13	44.246320	-123.037035	337.15	7.50	344.65
14	44.247072	-123.037741	336.37	7.50	343.87
15	44.248274	-123.038850	337.14	7.50	344.64
16	44.248337	-123.039006	337.10	7.50	344.60
17	44.248350	-123.045285	335.54	7.50	343.04
18	44.248350	-123.054996	336.62	7.50	344.12
19	44.248362	-123.056909	336.61	7.50	344.11
20	44.248456	-123.057276	337.57	7.50	345.07
21	44.248760	-123.057528	336.87	7.50	344.37
22	44.250663	-123.057550	338.45	7.50	345.95
23	44.250978	-123.057949	339.06	7.50	346.56
24	44.251020	-123.058489	341.10	7.50	348.60
25	44.250974	-123.065923	333.90	7.50	341.40
26	44.250678	-123.087520	333.76	7.50	341.26
27	44.250635	-123.097117	334.05	7.50	341.55
28	44.250812	-123.097648	335.74	7.50	343.24
29	44.251289	-123.098007	335.43	7.50	342.93

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	44.143115	-123.072279	396.87	16.00
OP 2	2	44.141622	-123.062688	398.18	16.00
OP 3	3	44.188990	-123.147063	334.20	16.00
OP 4	4	44.188971	-123.141382	343.97	16.00
OP 5	5	44.271667	-123.172833	314.41	16.00
OP 6	6	44.267117	-123.173711	318.03	16.00
OP 7	7	44.263394	-123.154622	318.44	16.00
OP 8	8	44.388542	-123.025827	303.90	16.00
OP 9	9	44.283423	-123.023213	352.98	16.00
OP 10	10	44.261088	-123.067182	332.30	16.00
OP 11	11	44.241326	-123.069640	343.23	16.00
OP 12	12	44.222268	-123.067804	350.52	16.00
OP 13	13	44.242885	-123.018342	372.38	16.00
OP 14	14	44.251851	-123.007772	390.01	16.00
OP 15	15	44.273595	-123.000347	452.21	16.00
OP 16	16	44.294110	-123.079295	315.69	16.00
OP 17	17	44.261069	-123.108460	327.51	16.00
OP 18	18	44.229034	-123.114196	340.40	16.00
OP 19	19	44.195879	-123.095150	358.10	16.00
OP 20	20	44.192259	-123.103247	358.28	16.00
OP 21	21	44.157001	-123.068880	387.26	16.00
OP 22	22	44.214170	-123.049954	357.55	16.00
OP 23	23	44.215118	-123.038280	412.19	16.00
OP 24	24	44.213210	-123.038677	484.48	16.00
OP 25	25	44.212360	-123.036371	535.40	16.00
OP 26	26	44.212486	-123.034069	529.12	16.00
OP 27	27	44.235531	-123.017431	486.75	16.00
OP 28	28	44.245867	-123.002988	476.45	16.00
OP 29	29	44.260099	-123.005650	378.68	16.00
OP 30	30	44.266112	-123.064883	327.66	16.00
OP 31	31	44.246128	-123.040172	341.32	16.00
OP 32	32	44.248005	-123.038104	336.24	16.00
OP 33	33	44.248189	-123.044590	337.55	16.00
OP 34	34	44.249974	-123.059324	336.83	16.00
OP 35	35	44.250585	-123.073122	338.07	16.00
OP 36	36	44.214304	-123.062650	356.31	16.00
OP 37	37	44.214344	-123.068483	352.44	16.00
OP 38	38	44.269383	-123.158082	317.25	16.00
OP 39	39	44.272655	-123.157621	316.33	16.00
OP 40	40	44.274627	-123.156168	315.33	16.00

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 1 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 1 and Route: Bowers Road

No glare found

PV array 1 and Route: Coburg Road

No glare found

PV array 1 and Route: Diamond Hill Rd

No glare found

PV array 1 and Route: Gap Rd

No glare found

PV array 1 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 1 and Route: I-5

No glare found

PV array 1 and Route: Mt Tom Dr

No glare found

PV array 1 and Route: Priceboro Dr

No glare found

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV array 1 and OP 18

No glare found

PV array 1 and OP 19

No glare found

PV array 1 and OP 20

No glare found

PV array 1 and OP 21

No glare found

PV array 1 and OP 22

No glare found

PV array 1 and OP 23

No glare found

PV array 1 and OP 24

No glare found

PV array 1 and OP 25

No glare found

PV array 1 and OP 26

No glare found

PV array 1 and OP 27

No glare found

PV array 1 and OP 28

No glare found

PV array 1 and OP 29

No glare found

PV array 1 and OP 30

No glare found

PV array 1 and OP 31

No glare found

PV array 1 and OP 32

No glare found

PV array 1 and OP 33

No glare found

PV array 1 and OP 34

No glare found

PV array 1 and OP 35

No glare found

PV array 1 and OP 36

No glare found

PV array 1 and OP 37

No glare found

PV array 1 and OP 38

No glare found

PV array 1 and OP 39

No glare found

PV array 1 and OP 40

No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 2 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 2 and Route: Bowers Road

No glare found

PV array 2 and Route: Coburg Road

No glare found

PV array 2 and Route: Diamond Hill Rd

No glare found

PV array 2 and Route: Gap Rd

No glare found

PV array 2 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 2 and Route: I-5

No glare found

PV array 2 and Route: Mt Tom Dr

No glare found

PV array 2 and Route: Priceboro Dr

No glare found

PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 8

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV array 2 and OP 14

No glare found

PV array 2 and OP 15

No glare found

PV array 2 and OP 16

No glare found

PV array 2 and OP 17

No glare found

PV array 2 and OP 18

No glare found

PV array 2 and OP 19

No glare found

PV array 2 and OP 20

No glare found

PV array 2 and OP 21

No glare found

PV array 2 and OP 22

No glare found

PV array 2 and OP 23

No glare found

PV array 2 and OP 24

No glare found

PV array 2 and OP 25

No glare found

PV array 2 and OP 26

No glare found

PV array 2 and OP 27

No glare found

PV array 2 and OP 28

No glare found

PV array 2 and OP 29

No glare found

PV array 2 and OP 30

No glare found

PV array 2 and OP 31

No glare found

PV array 2 and OP 32

No glare found

PV array 2 and OP 33

No glare found

PV array 2 and OP 34

No glare found

PV array 2 and OP 35

No glare found

PV array 2 and OP 36

No glare found

PV array 2 and OP 37

No glare found

PV array 2 and OP 38

No glare found

PV array 2 and OP 39

No glare found

PV array 2 and OP 40

No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 3 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 3 and Route: Bowers Road

No glare found

PV array 3 and Route: Coburg Road

No glare found

PV array 3 and Route: Diamond Hill Rd

No glare found

PV array 3 and Route: Gap Rd

No glare found

PV array 3 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 3 and Route: I-5

No glare found

PV array 3 and Route: Mt Tom Dr

No glare found

PV array 3 and Route: Priceboro Dr

No glare found

PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 3

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 5

No glare found

PV array 3 and OP 6

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV array 3 and OP 14

No glare found

PV array 3 and OP 15

No glare found

PV array 3 and OP 16

No glare found

PV array 3 and OP 17

No glare found

PV array 3 and OP 18

No glare found

PV array 3 and OP 19

No glare found

PV array 3 and OP 20

No glare found

PV array 3 and OP 21

No glare found

PV array 3 and OP 22

No glare found

PV array 3 and OP 23

No glare found

PV array 3 and OP 24

No glare found

PV array 3 and OP 25

No glare found

PV array 3 and OP 26

No glare found

PV array 3 and OP 27

No glare found

PV array 3 and OP 28

No glare found

PV array 3 and OP 29

No glare found

PV array 3 and OP 30

No glare found

PV array 3 and OP 31

No glare found

PV array 3 and OP 32

No glare found

PV array 3 and OP 33

No glare found

PV array 3 and OP 34

No glare found

PV array 3 and OP 35

No glare found

PV array 3 and OP 36

No glare found

PV array 3 and OP 37

No glare found

PV array 3 and OP 38

No glare found

PV array 3 and OP 39

No glare found

PV array 3 and OP 40

No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 4 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 4 and Route: Bowers Road

No glare found

PV array 4 and Route: Coburg Road

No glare found

PV array 4 and Route: Diamond Hill Rd

No glare found

PV array 4 and Route: Gap Rd

No glare found

PV array 4 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 4 and Route: I-5

No glare found

PV array 4 and Route: Mt Tom Dr

No glare found

PV array 4 and Route: Priceboro Dr

No glare found

PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 4

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 7

No glare found

PV array 4 and OP 8

No glare found

PV array 4 and OP 9

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

PV array 4 and OP 14

No glare found

PV array 4 and OP 15

No glare found

PV array 4 and OP 16

No glare found

PV array 4 and OP 17

No glare found

PV array 4 and OP 18

No glare found

PV array 4 and OP 19

No glare found

PV array 4 and OP 20

No glare found

PV array 4 and OP 21

No glare found

PV array 4 and OP 22

No glare found

PV array 4 and OP 23

No glare found

PV array 4 and OP 24

No glare found

PV array 4 and OP 25

No glare found

PV array 4 and OP 26

No glare found

PV array 4 and OP 27

No glare found

PV array 4 and OP 28

No glare found

PV array 4 and OP 29

No glare found

PV array 4 and OP 30

No glare found

PV array 4 and OP 31

No glare found

PV array 4 and OP 32

No glare found

PV array 4 and OP 33

No glare found

PV array 4 and OP 34

No glare found

PV array 4 and OP 35

No glare found

PV array 4 and OP 36

No glare found

PV array 4 and OP 37

No glare found

PV array 4 and OP 38

No glare found

PV array 4 and OP 39

No glare found

PV array 4 and OP 40

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 5 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 5 and Route: Bowers Road

No glare found

PV array 5 and Route: Coburg Road

No glare found

PV array 5 and Route: Diamond Hill Rd

No glare found

PV array 5 and Route: Gap Rd

No glare found

PV array 5 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 5 and Route: I-5

No glare found

PV array 5 and Route: Mt Tom Dr

No glare found

PV array 5 and Route: Priceboro Dr

No glare found

PV array 5 and OP 1

No glare found

PV array 5 and OP 2

No glare found

PV array 5 and OP 3

No glare found

PV array 5 and OP 4

No glare found

PV array 5 and OP 5

No glare found

PV array 5 and OP 6

No glare found

PV array 5 and OP 7

No glare found

PV array 5 and OP 8

No glare found

PV array 5 and OP 9

No glare found

PV array 5 and OP 10

No glare found

PV array 5 and OP 11

No glare found

PV array 5 and OP 12

No glare found

PV array 5 and OP 13

No glare found

PV array 5 and OP 14

No glare found

PV array 5 and OP 15

No glare found

PV array 5 and OP 16

No glare found

PV array 5 and OP 17

No glare found

PV array 5 and OP 18

No glare found

PV array 5 and OP 19

No glare found

PV array 5 and OP 20

No glare found

PV array 5 and OP 21

No glare found

PV array 5 and OP 22

No glare found

PV array 5 and OP 23

No glare found

PV array 5 and OP 24

No glare found

PV array 5 and OP 25

No glare found

PV array 5 and OP 26

No glare found

PV array 5 and OP 27

No glare found

PV array 5 and OP 28

No glare found

PV array 5 and OP 29

No glare found

PV array 5 and OP 30

No glare found

PV array 5 and OP 31

No glare found

PV array 5 and OP 32

No glare found

PV array 5 and OP 33

No glare found

PV array 5 and OP 34

No glare found

PV array 5 and OP 35

No glare found

PV array 5 and OP 36

No glare found

PV array 5 and OP 37

No glare found

PV array 5 and OP 38

No glare found

PV array 5 and OP 39

No glare found

PV array 5 and OP 40

No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 6 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 6 and Route: Bowers Road

No glare found

PV array 6 and Route: Coburg Road

No glare found

PV array 6 and Route: Diamond Hill Rd

No glare found

PV array 6 and Route: Gap Rd

No glare found

PV array 6 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 6 and Route: I-5

No glare found

PV array 6 and Route: Mt Tom Dr

No glare found

PV array 6 and Route: Priceboro Dr

No glare found

PV array 6 and OP 1

No glare found

PV array 6 and OP 2

No glare found

PV array 6 and OP 3

No glare found

PV array 6 and OP 4

No glare found

PV array 6 and OP 5

No glare found

PV array 6 and OP 6

No glare found

PV array 6 and OP 7

No glare found

PV array 6 and OP 8

No glare found

PV array 6 and OP 9

No glare found

PV array 6 and OP 10

No glare found

PV array 6 and OP 11

No glare found

PV array 6 and OP 12

No glare found

PV array 6 and OP 13

No glare found

PV array 6 and OP 14

No glare found

PV array 6 and OP 15

No glare found

PV array 6 and OP 16

No glare found

PV array 6 and OP 17

No glare found

PV array 6 and OP 18

No glare found

PV array 6 and OP 19

No glare found

PV array 6 and OP 20

No glare found

PV array 6 and OP 21

No glare found

PV array 6 and OP 22

No glare found

PV array 6 and OP 23

No glare found

PV array 6 and OP 24

No glare found

PV array 6 and OP 25

No glare found

PV array 6 and OP 26

No glare found

PV array 6 and OP 27

No glare found

PV array 6 and OP 28

No glare found

PV array 6 and OP 29

No glare found

PV array 6 and OP 30

No glare found

PV array 6 and OP 31

No glare found

PV array 6 and OP 32

No glare found

PV array 6 and OP 33

No glare found

PV array 6 and OP 34

No glare found

PV array 6 and OP 35

No glare found

PV array 6 and OP 36

No glare found

PV array 6 and OP 37

No glare found

PV array 6 and OP 38

No glare found

PV array 6 and OP 39

No glare found

PV array 6 and OP 40

No glare found

PV: PV array 7 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Albany-Jurisdiction City Hwy	0	0.0	0	0.0
Bowers Road	0	0.0	0	0.0
Coburg Road	0	0.0	0	0.0
Diamond Hill Rd	0	0.0	0	0.0
Gap Rd	0	0.0	0	0.0
Halsey-Sweet Home Hwy	0	0.0	0	0.0
I-5	0	0.0	0	0.0
Mt Tom Dr	0	0.0	0	0.0
Priceboro Dr	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 7 and Route: Albany-Jurisdiction City Hwy

No glare found

PV array 7 and Route: Bowers Road

No glare found

PV array 7 and Route: Coburg Road

No glare found

PV array 7 and Route: Diamond Hill Rd

No glare found

PV array 7 and Route: Gap Rd

No glare found

PV array 7 and Route: Halsey-Sweet Home Hwy

No glare found

PV array 7 and Route: I-5

No glare found

PV array 7 and Route: Mt Tom Dr

No glare found

PV array 7 and Route: Priceboro Dr

No glare found

PV array 7 and OP 1

No glare found

PV array 7 and OP 2

No glare found

PV array 7 and OP 3

No glare found

PV array 7 and OP 4

No glare found

PV array 7 and OP 5

No glare found

PV array 7 and OP 6

No glare found

PV array 7 and OP 7

No glare found

PV array 7 and OP 8

No glare found

PV array 7 and OP 9

No glare found

PV array 7 and OP 10

No glare found

PV array 7 and OP 11

No glare found

PV array 7 and OP 12

No glare found

PV array 7 and OP 13

No glare found

PV array 7 and OP 14

No glare found

PV array 7 and OP 15

No glare found

PV array 7 and OP 16

No glare found

PV array 7 and OP 17

No glare found

PV array 7 and OP 18

No glare found

PV array 7 and OP 19

No glare found

PV array 7 and OP 20

No glare found

PV array 7 and OP 21

No glare found

PV array 7 and OP 22

No glare found

PV array 7 and OP 23

No glare found

PV array 7 and OP 24

No glare found

PV array 7 and OP 25

No glare found

PV array 7 and OP 26

No glare found

PV array 7 and OP 27

No glare found

PV array 7 and OP 28

No glare found

PV array 7 and OP 29

No glare found

PV array 7 and OP 30

No glare found

PV array 7 and OP 31

No glare found

PV array 7 and OP 32

No glare found

PV array 7 and OP 33

No glare found

PV array 7 and OP 34

No glare found

PV array 7 and OP 35

No glare found

PV array 7 and OP 36

No glare found

PV array 7 and OP 37

No glare found

PV array 7 and OP 38

No glare found

PV array 7 and OP 39

No glare found

PV array 7 and OP 40

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

© 2026 Sims Industries d/b/a ForgeSolar, All Rights Reserved.

This analysis was conducted using the best available radiometric modeling at the time of generation. Future updates to the modeling methodology may yield different results.

Attachment B

FAA Notice Criteria Tool

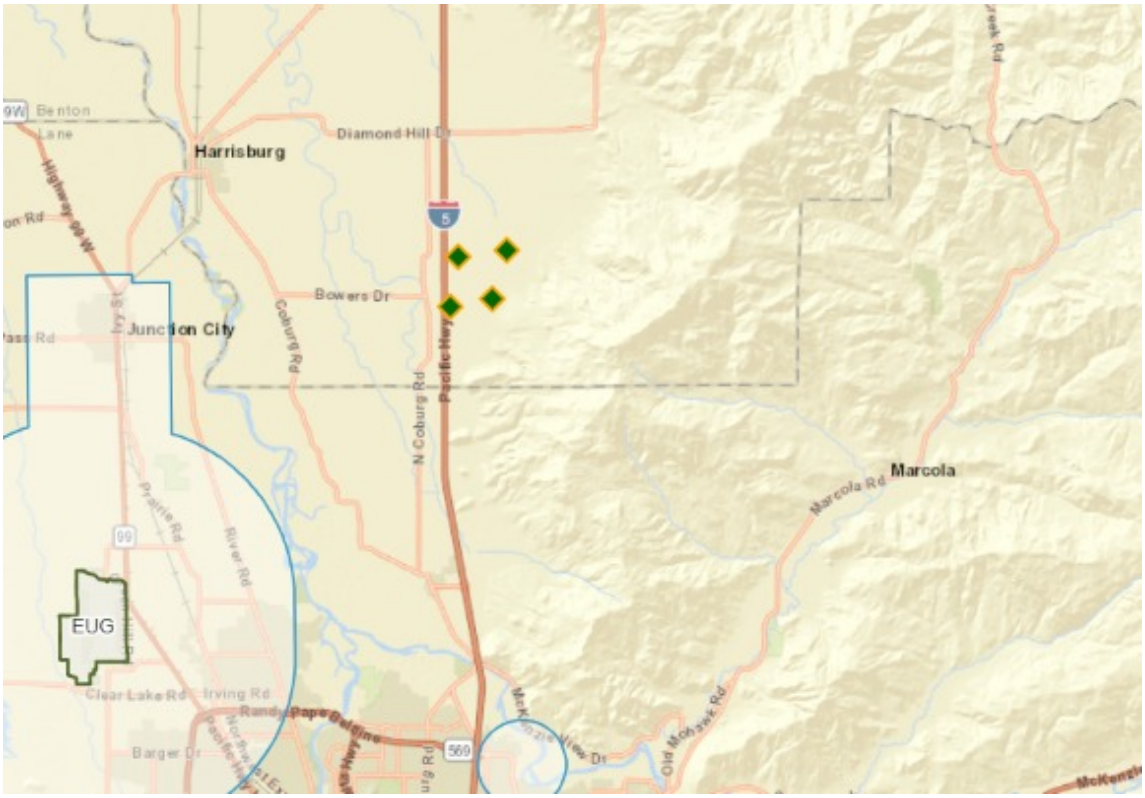
OE/AAA Pre-screening Results

Thu Apr 30 2026 13:15:43 GMT-0400 (Eastern Daylight Time)

Structure: Solar Panel

Latitude	Longitude	Height	Site Elevation	AMSL
44.241014°	-123.054743°	11	342	353
44.243283°	-123.033256°	11	340	351
44.227892°	-123.039586°	11	352	363
44.225278°	-123.057803°	11	348	359

Based on the information you provided, you are not required to file notice with the FAA.



OE/AAA Pre-screening Results

Thu Apr 30 2026 13:19:29 GMT-0400 (Eastern Daylight Time)

Structure: Solar Panel

Latitude	Longitude	Height	Site Elevation	AMSL
44.265453°	-123.020968°	11	345	356
44.265576	-123.0076	11	370	381
44.251225	-123.015324°°	11	363	374
44.253702	-123.023274°	11	346	357

Based on the information you provided, you are not required to file notice with the FAA.

