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Red Butte Cinder Pit Expansion Project Environmental Assessment

Bend-Fort Rock Ranger District
Deschutes National Forest
Deschutes County, Oregon

Township 18 South, Range 11 East, Section 28
Willamette Meridian

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TABLE OF CONTENTS

List of Figures 1

List of Tables 1

Chapter 1: Purpose and Need for Action 3

1.1 Introduction 3

1.2 Background and Existing Condition 3

1.3 Project Area Description 4

1.4 Purpose and Need 6

1.5 Proposed Action 6

1.6 Management Direction 7

1.6.1 Deschutes National Forest Land and Resource Management Plan 7

1.6.2 Amendments to the Deschutes Land and Resource Management Plan 10

1.7 Summary of the Scoping Process 10

1.8 Issues 10

1.8.1 Key Issues 10

1.8.2 Analysis Issues 11

1.9 Other Pertinent Laws and Regulations 11

1.9.1 National Forest Management Act of 1976 11

1.9.2 The National Environmental Policy Act of 1969, as amended 11

1.9.3 The Endangered Species Act of 1973, as amended 12

1.9.4 Multiple-Use Sustained-Yield Act of 1960 12

1.9.5 The National Historic Preservation Act of 1966, as amended 12

1.9.6 The Migratory Bird Treaty Act and Executive Order 13186 13

1.9.7 Executive Order on Invasive Species 13

1.9.8 The Clean Air Act, as amended in 1977 and 1990 13

1.10 Project Record 14

1.11 Decision to be Made 14

Chapter 2 – Alternatives, Including the Proposed Action 15
2.1 Introduction 15
2.2 Alternative Development Process 15
2.3 Alternatives Considered in Detail 15
2.3.1 Alternative 1 – No Action 15
2.3.2 Alternative 2 15
2.4 Comparisons of Alternatives 16
2.5 Project Design Elements 16
2.5.1 Resource Protection Measures 16
Chapter 3 – Environmental Consequences 17
3.1 Introduction 17
3.2 Cumulative Actions and Activities 17
3.3 Alternative Evaluation 18
3.3.1 Wildlife 18
3.3.2 Botany 58
3.3.3 Invasive Plants 58
3.3.4 Scenery 60
3.3.5 Heritage 66
3.4 Required and Additional Disclosures and Consistency with Laws, Regulations, Policy and Procedures 66
3.4.1 Human Health and Safety 66
3.4.2 Water Quality and Fisheries 67
3.4.3 Wetlands and Floodplains 68
3.4.4 Prime Farmland, Rangeland, and Forestland 68
3.4.5 Civil Rights and Environmental Justice 68
3.4.6 Irreversible and Irretrievable Commitments of Resources 69
3.4.7 Climate Change 69
Chapter 4 – Consultation and Coordination 70
4.1 Public Involvement 70

4.2 Consultation with Others 71
4.3 Interdisciplinary Participation 71
Appendix A. Literature Cited 72
Appendix B. Scenic Viewpoint Simulations 77

LIST OF FIGURES

Figure 1: Red Butte Pit Vicinity Map 5
Figure 2: LRMP Management Areas in the Project Area 9

Figure A. 1. Map of Red Butte Cinder Pit #1 and Viewpoints 77
Figure A. 2 Plan View of Red Cinder Pit #1, Existing Conditions with Expansion Limits 78
Figure A. 3. Photo Simulations from Lava Butte 79
Figure A. 4. Photo Simulations from North Portal 80
Figure A. 5. Photo Simulations From US Forest Service Road 41 81
Figure A. 6. Axonometric Sketches of Red Butte Cinder Pit #1 82

LIST OF TABLES

Table 2.1: Comparison of Alternative 1 and Alternative 2 16

Table 3.1: USFWS Endangered, Threatened or Proposed Wildlife Species or Habitat suspected on the DNF and impacts from the proposed Red Butte Cinder Pit Expansion Project. 20
Table 3.2: Region 6 Sensitive animal species and Federal Candidate species occurring or potentially occurring on the Forest and the impacts from the proposed project. 22
Table 3.3: Lewis' woodpecker habitat by Watershed and Subwatersheds in the project vicinity. 27
Table 3.4: Current Lewis' woodpecker nesting habitat and loss associated with the project expansion. . 28
Table 3.5: White-headed woodpecker habitat by Watershed and Subwatersheds in the project vicinity 29
Table 3.6: Current white-headed woodpecker nesting habitat and loss associated with the project expansion. 30
Table 3.7: Impact Conclusions for LRMP Management Indicator Species from the proposed Red Butte Pit Expansion Project. 37
Table 3.8: Current Cooper's and sharp-shinned hawk nesting habitat and loss associated with the project expansion 43
Table 3.9: Current MIS woodpecker nesting habitat and loss associated with the project expansion..... 46
Table 3.10: Priority habitat features and associated focal species for the East-Slope Cascade Strategy. . 50

Table 3.11: Impact Conclusions for Focal Bird Species from the proposed Red Butte Pit Expansion Project. 50
Table 3.12: Current pygmy nuthatch and chipping sparrow nesting habitat and loss associated with the project expansion 53
Table 3.13: Birds of Conservation Concern for BCR 9 – Great Basin. 54
Table 3.14: Impact Conclusions for Birds of Conservation Concern from the proposed Red Butte Pit Expansion Project 55
Table 3.15: High Priority Shorebird Species/Populations 57

CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental effects that would result from the proposed action. This document is organized into five parts:

Purpose and Need for Action: This section includes information on the history of the project proposal, the purpose of and need for the project, the proposal for achieving that purpose and need, and key issues used to formulate alternatives, develop mitigation, and track effects and other issues that did not drive alternatives but were addressed in this analysis.

Alternatives: This section provides a more detailed description of the proposed action as well as alternative methods for achieving the stated purpose. This discussion also includes mitigation measures.

Environmental Consequences: This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource areas (i.e. wildlife, botany). Within each section, the effect of the no action alternative provides a baseline for evaluation and comparison of the other alternatives that follow are described in this section.

Consultation and Coordination: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.

Appendices: The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project area resources, data specific to the project, public notifications and their responses, and miscellaneous documentation, may be found in the project record located at the Bend-Fort Rock Ranger District, Bend, Oregon.

1.2 BACKGROUND AND EXISTING CONDITION

The Bend-Fort Rock Ranger District received a request to expand Red Butte Cinder Pit (hereafter called Red Butte Pit) from Oregon Department of Transportation (ODOT) to provide a source of material for winter traction aggregate. In December 2012, ODOT conducted exploratory drilling and sampling of the subsurface around the existing pit to determine the best locations for expansion. Results of the exploration indicate that the expansion is expected to provide an anticipated 20-year, or more, supply of cinder material. Yearly needs of cinder material depend on winter travel conditions.

The Deschutes National Forest Land and Resource Management Plan (LRMP or Forest Plan) describes the desired future condition on how minerals are expected to be utilized as:

> "*Volcanic cinders, sand and gravel, crushable road rock, and common fill and clay continue to be provided for use on the Forest, by other government agencies, and by the public*" (LRMP pg. 4-6)

Red Butte Pit (Miller Red Butte Cinder Pit #2) is identified in the Deschutes National Forest Pits and Quarries Management and Inventory as frequently used to obtain mineral materials and/or temporarily

stockpile materials. This inventory also recommends retaining this pit as a material site. Rehabilitation of the site would occur should designation of the pit as a site for mineral material source change.

According to the records, Red Butte Pit was first developed in the early 1900s by Shevlin-Hixon Company for road-building material to assist in log removal. The Forest Service acquired the cinder pit in a land exchange in 1944 from Shevlin-Hixon. Red Butte Pit has been used by ODOT since 1996 operating under a Forest Service Contract for the Sale of Mineral Materials. The pit has been used every four to seven years since 1996 with the most recent entries in 2001 and 2005 removing just under 5,000 cubic yards of material each time. ODOT would like long term planning and use of Red Butte Pit in order to replenish the cinder supply at the Mt. Bachelor Sand Storage Shed. Cinders are used as a winter traction sanding aggregate. It is anticipated that expansion of the pit would increase the frequency of entries into to once every three to four years, depending on volumes actually produced and subsequently used.

Red Butte Pit is in an ideal location for ODOT due to its proximity to their Mt. Bachelor Sand Storage Shed (approximately 8 miles to the west) off the Cascade Lakes Highway. At this time, there are no other available, developed rock or cinder sources in the vicinity of the ODOT sand shed that meet the need for a long-term source. Having a material source in close proximity to use areas is important in order to minimize haul distance thus conserving petroleum fuel resources while reducing time and costs associated with hauling. Cinder sources are preferred over rock quarries for production of sanding aggregate because blasting is not necessary and are therefore lower cost for excavation.

1.3 Project Area Description

The Red Butte Pit is located on the Bend-Fort Rock Ranger District in Deschutes County approximately 5 miles west of Bend, Oregon off of the Cascade Lakes Scenic Highway (Forest Service Road 46), Figure 1-1 below.

Legal description is as follows: Township 18 South, Range 11 East, Section 28, W.M.

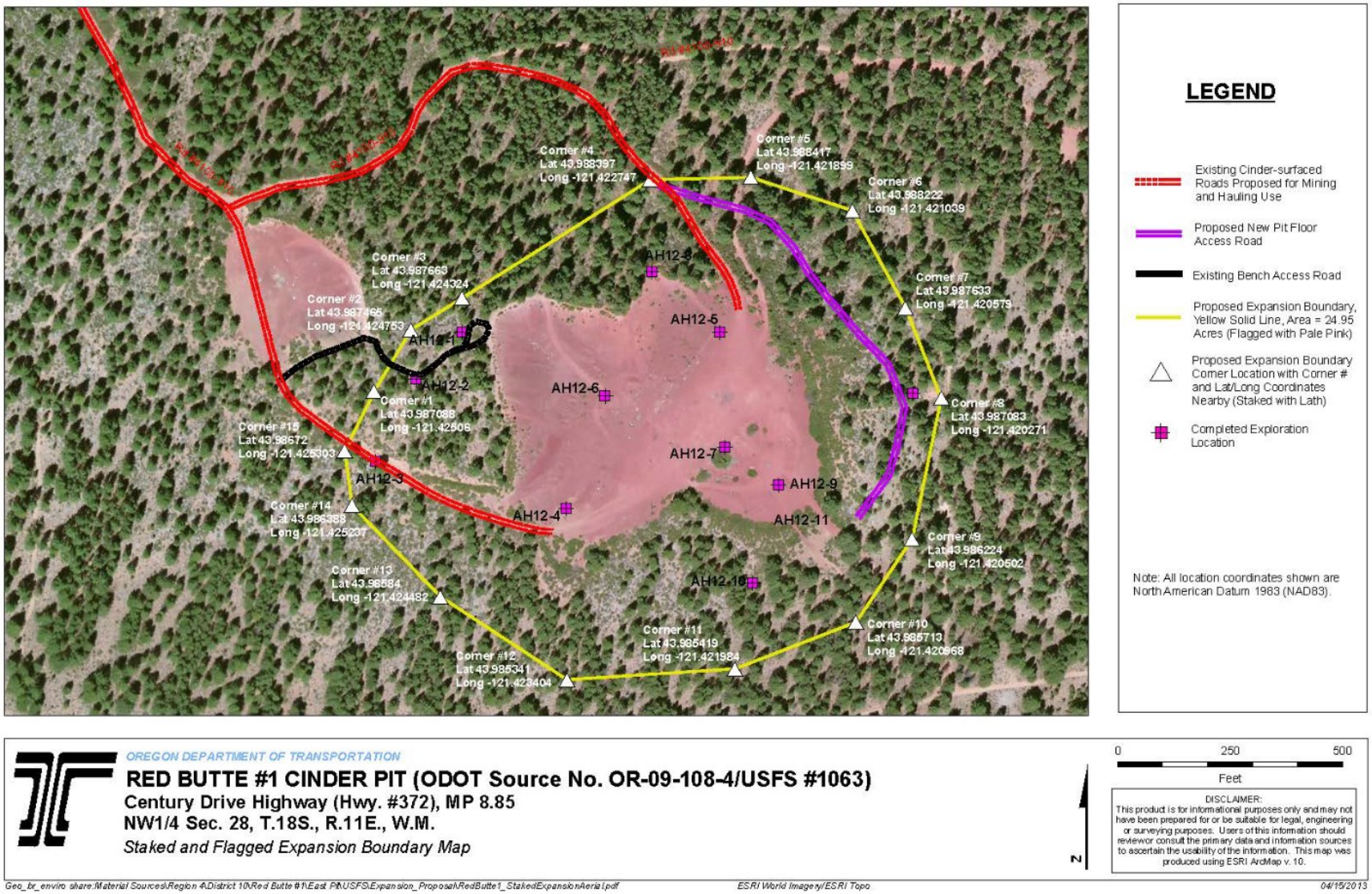

Figure 1: Red Butte Pit Vicinity Map

1.4 PURPOSE AND NEED

The purpose of this project is for the Forest Service to respond to ODOTs request to expand the pit in order to utilize the mineral cinders to accommodate their 10-year Contract for the Sale of Mineral Materials. The need for action is based on ODOTs need for sanding aggregate to use during inclement winter weather.

ODOTs Purpose and Need

Existing Condition: The Red Butte Pit currently utilizes approximately 8.9 acres. The current size of the pit does not provide a long-term aggregate source.

Desired Condition: The purpose for the pit expansion is to provide a long-term, economical, and readily accessible source of aggregate material that meets quality standards for transportation projects while limiting resource effects to existing material source locations. These materials would be used for a variety of transportation-related needs primarily on Cascade Lakes Highway (Forest Service Road 46/Highway 372). After crushing and screening of the raw cinder, intended use of the material is for winter traction roadway sanding aggregate. Other potential uses of the material are road maintenance and possible road construction actions (sanding aggregate, gravel surfacing aggregate, subsurface base aggregate, embankment borrow material) intermittently by the Forest Service, ODOT and Deschutes County Road Department over the same time period. The expansion project would also address current and future safety concerns at the site. Plans for expansion of the pit include development and reclamation of the site in compliance with current state and federal regulations and standards (Federal Mine Safety & Health Act of 1977, Public Law 91-173, as amended by Public Law 95-164).

Having an adequate supply of sanding aggregate is needed by ODOT to increase motor vehicle traction and safety on Cascade Lakes Highway and local, county-maintained roads such as the Sunriver-Mt. Bachelor Road (Forest Service Road 45) and Forest Service Road 40 by Deschutes County Road Department. These routes are heavily used for recreation and related commerce purposes during the winter season.

The Forest Plan supports mineral developments. Use of existing material sources will be given priority over undeveloped sources (LRMP MN-2, pg. 4-68). Expansion of this existing source reduces the disturbance and impacts associated with locating and developing a new material source. In addition, steep slopes in excess of 67% within the excavation area of Red Butte Pit are considered to be unsafe. The proposed expansion would address the need to flatten steep excavated slopes and leave safer 50% slopes during periods of inactivity in compliance with state and federal mining and reclamation regulation.

The Forest Plan also supports mineral developments in scenic views “if the facilities and associated improvements are located, designed, and maintained to blend with the characteristic landscape. Visual quality objectives may not always be met when the viewer is within the special use site itself, due to the usual large scale of these facilities” (LRMP M9-83).

1.5 PROPOSED ACTION

ODOT is proposing to expand the existing 8.9 acre Red Butte Pit by approximately 16 acres to encompass a total of 24.9 acres of National Forest System land. This expansion would provide material that would meet ODOTs needs for over 20 years. The pit would remain open for long-term

use. A 10-year operating and mineral material permit has been issued to ODOT for existing and on-going use of the existing pit. A construction permit would be issued for the expansion work. Temporary use of crushing and screening equipment within the project boundary to process fine and coarse material produced in the pit could occur.

Within the 16-acre expansion area, all trees would be harvested and/or removed. Stripping of the overburden would occur as needed to minimize potential loss due to wind or runoff erosion while maintaining as much habitat as possible and lowering the impacts to the viewshed. The expansion of the cinder pit would be designed to use the existing natural topography and forest vegetation to screen the pit from view from the scenic highway.

Existing steep slopes (over 50% to in excess of 67%) that are now considered unsafe would be flattened to 50% or flatter to comply with state and federal mining and reclamation regulations and to provide for operational and public safety.

Winter traction sanding aggregate produced at this site would be stockpiled at ODOT's Mt. Bachelor Sand Shed site at mile post (MP) 16.5 of the Cascade Lakes Highway. Sanding aggregate produced for Deschutes County's use would be stockpiled at one of their county-controlled stockpile sites, most likely at one located west of Sunriver, OR

1.6 Management Direction

1.6.1 Deschutes National Forest Land and Resource Management Plan

This environmental assessment is tiered to the Final Environmental Impact Statement (FEIS) for the Deschutes National Forest Land and Resource Management Plan as amended. The Forest Plan guides all management activities on the Forests. It establishes overall goals and objectives, and standards and guidelines for proposed activities, including specific management area guidance for resource planning. Major Forest Plan amendments that pertain to this project are: the Inland Native Fish Strategy (INFISH) and Eastside Screens which guide all natural resource management activities within the project area and provides standards and guidelines for the Deschutes National Forest.

MA9 Scenic Views

The goal of scenic views is to provide Forest visitors with high quality scenery that represents the natural character of central Oregon. The theme of scenic views is for landscapes seen from selected travel routes and use areas to be managed to maintain or enhance the appearance of the areas being viewed (LRMP pg. 4-121).

Mineral developments may be located in this management area if the development and associated facilities are located, designed, and maintained to blend with the characteristic landscape. Visual quality objectives may not always be met when the viewer is within the site itself. (LRMP M9-83pg. 4-130)

Trees may be removed where necessary to permit access to mineral developments. (LRMP M9-84 pg. 4-130)

Ryan Ranch Key Elk Area

The project area is also within the Ryan Ranch Key Elk Area (KEA), as designated in the Forest Plan (LRMP 4-56 to 4-58; Appendix 16-2). Elk are found in certain key habitat areas, within which land management is designed to provide conditions needed to support summering and wintering elk. Key

elk areas are not a separate management area designation in the Forest Plan but forest-wide standards and guidelines (S&Gs) are identified for these areas.

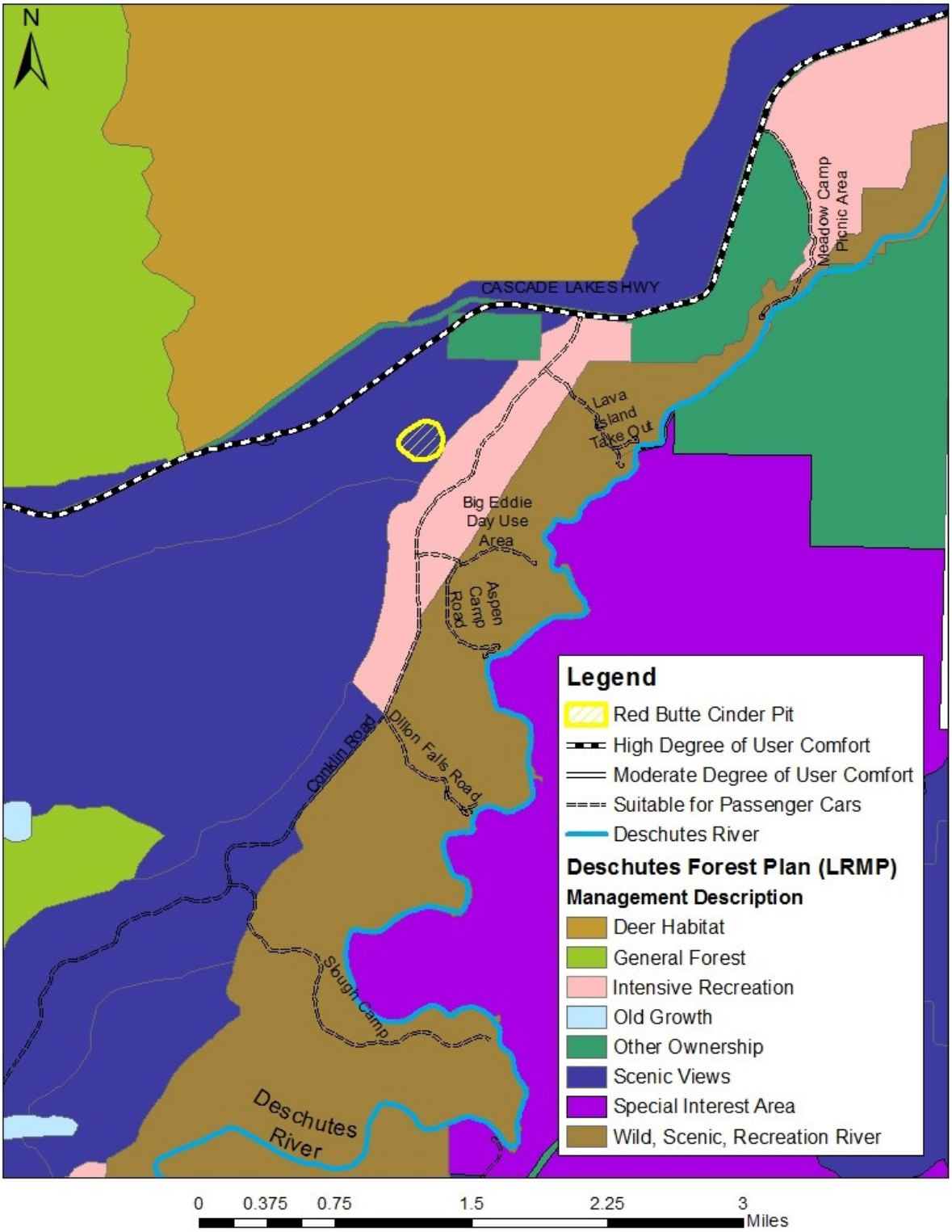

Figure 2: LRMP Management Areas in the Project Area

1.6.2 Amendments to the Deschutes Land and Resource Management Plan

Regional Forester's Eastside Forest Plan Amendment No. 2 (Eastside Screens) – In 1995 the Regional Forester amended Forest Plans east of the northern spotted owl range. The project area is subject to this amendment, also known as the Eastside Screens. The EA for the Screens stated the primary purpose was "to conserve those components of the landscape – old forest abundance, wildlife habitat in late and old structural stages – in relation to larger ecosystem management to protect habitat for certain species of wildlife and to promote the vigor and health of the forests." (Revised Environmental Assessment for the Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales, p. 5). Although intended to be interim direction, the Eastside Screens are still in effect for timber sale planning on the Deschutes National Forest east of the range of the spotted owl and contain guidelines for management of timber sales in late and old structure (LOS) relative to the Historic Range of Variability (HRV), wildlife connectivity corridors, snags, coarse woody debris, and goshawk management.

Inland Native Fish (INFISH) – The riparian management guidelines of the Forest Plan were amended by the Inland Native Fish Strategy (INFISH, 1995). INFISH was intended to be interim direction to protect habitat and populations of resident native fish and to provide for options for management. No activities are proposed within the RHCA of the Deschutes River, and there would be no impacts to fish.

1.7 Summary of the Scoping Process

The Red Butte Pit Expansion project was first published to the Deschutes and Ochoco National Forest project webpage on 08/08/2013 at: http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=42639

This project was first published in the Deschutes National Forest Schedule of Proposed Actions (SOPA), a quarterly publication, in October 2013 and has appeared in each quarterly SOPA since then. This is a quarterly report that is distributed to interested individuals, organizations, and agencies. The SOPA is automatically updated and available on the Deschutes National Forest webpage at: http://www.fs.fed.us/sopa/forest-level.php?110601.

A detailed description of the proposed action was mailed on August 16, 2013, to approximately 100 forest users and concerned publics, soliciting comments and concerns related to this project. This letter was also mailed to the Burns Paiute Tribe, The Klamath Tribe, and the Confederated Tribes of the Warm Springs. Coordination and consultation with the tribes is ongoing. No input was received on the proposed action.

1.8 Issues

The Interdisciplinary (ID) team of Forest Service resource specialists evaluated input from public scoping. All issues raised during the life of this project are addressed in this EA. Issues and concerns are used to formulate and develop alternatives or develop constraints and mitigation measures to reduce or eliminate environmental effects.

Issues are generally divided into the following groups: non-key issues, key issues and analysis issues.

1.8.1 Key Issues

Key issues are defined as those directly or indirectly caused by implementing the proposed action. Key issues are used to formulate and develop alternatives to the proposed action, prescribe mitigation measures, or analyze and disclose environmental effects. Key indicators are measures used to track the effects of the actions on the issues. The proposed action did not elicit any public comments and therefor no key issues were identified and no additional actions were developed.

1.8.2 Analysis Issues

Analysis issues, as used in this EA, were identified as those that do not drive an alternative, or address the purpose and need, and that can be addressed through standards and guidelines, mitigation, analysis needs or monitoring. These items did not result in differing design elements among alternatives but are important for providing the Responsible Official and the public with complete information about the effects of the project.

The following elements were not considered to be key issues but are relevant to the project and tracked through the analysis:

1. Wildlife
2. Proposed, Endangered, Threatened, and Sensitive Plant Species
3. Invasive Plant Species
4. Fisheries, Water Quality, and Riparian Habitat
5. Scenery
6. Heritage Resources

1.9 Other Pertinent Laws and Regulations

Analysis and documentation has been done according to direction contained in the National Forest Management Act, the National Environmental Policy Act, the Council on Environmental Quality regulations, Forest Service NEPA regulations, The Endangered Species Act, the National Historic Preservation Act, the Clean Air Act, and the Clean Water Act.

The following is a brief explanation of each of these laws and their relation to the current project planning effort.

1.9.1 National Forest Management Act of 1976

The National Forest Management Act (NFMA) directs all actions taken on National Forest System (NFS) lands to be consistent with Land and Resource Management Plans. The regulations in this subpart set forth a process for developing, adopting, and revising land and resource management plans for NFS lands as required by the Forest and Rangeland Renewable Resource Planning Act of 1974, as amended. These regulations prescribe how land and resource management planning is conducted on NFS lands. The resulting plans shall provide for multiple-use and sustained yield of goods and services from the NFS in a way that maximizes the long-term net public benefits in an environmentally sound manner. This project would incorporate design features that ensure compliance with amended Forest Plan standards and guidelines.

1.9.2 The National Environmental Policy Act of 1969, as amended

The purposes of this Act are “to declare a national policy which would encourage productive and enjoyable harmony between man and his environment, to promote efforts which would prevent or

eliminate damaged to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nations; and to establish a Council on Environmental Quality" (42 U.S.C. Sec. 4321). The law further states "it is the continuing policy of the Federal Government, in cooperation, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of the present and future generations of Americans." This law essentially pertains to public participation, environmental analysis, and documentation.

The Red Butte Pit project follows the format and content requirements of environmental analysis and documentation. The entire process of preparing this environmental assessment was undertaken to comply with NEPA. Cumulative effects were assessed and displayed where they occur in the manner most informative and logical to display. The depth of analysis was tailored to the degree of effect. Therefore, a brief discussion is most useful to decision makers and the public to reduce paperwork and the accumulation of extraneous background data and to emphasize real environmental issues and alternatives (CEQ, 1500.2b). In many instances within this analysis, past and present activities were included in the existing condition. Foreseeable actions were also addressed if there was a proposed action and if it is in the public domain.

1.9.3 THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED

Effects to Threatened and Endangered species are evaluated in the Wildlife and Botany sections of Chapter 3 of this EA and in their resource reports found in the project record. The Endangered Species Act of 1973 requires that actions of federal agencies do not jeopardize or adversely modify critical habitat of federally listed species. A Biological Evaluation has been completed for threatened, endangered, and sensitive plant, and terrestrial species.

The purposes of this Act are to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered and threatened species, and to take such steps as may be appropriate to achieve the purpose of the treaties and conventions set forth in subsection (a) of this section". The Act also states, "It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act."

1.9.4 MULTIPLE-USE SUSTAINED-YIELD ACT OF 1960

The Multiple-Use Sustained Yield Act of 1960 requires the Forest Service to manage NFS lands for multiple uses (including timber, recreation, fish and wildlife, range, and watershed). All renewable resources are to be managed in such a way that they are available for future generations.

1.9.5 THE NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED

The National Historic Preservation Act (NHPA) requires Federal agencies to consult with American Indian Tribes, State, and local groups. Section 106 of this Act requires Federal agencies to review the effects project proposals may have on the cultural resources in the analysis area.

Potentially affected Tribes (Burns Paiute, The Klamath Tribe, and the Confederated Tribes of the Warm Springs) have been contacted. The State Historic Preservation Officer (SHPO) has been consulted on this project.

1.9.6 The Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act of 1918
The purpose of this Act is to establish an international framework for the protection and conservation of migratory birds. The Act makes it illegal, unless permitted by regulations, to "pursue, hunt, take, capture, deliver for shipment, ship, cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, including in this Convention…for the protection of migratory birds…or any part, nest, or egg of any such bird" (16USC 703). The original 1918 statute implemented the 1916 Convention between the United States and Great Britain (for Canada). Later amendments implemented treaties between the Unites States and Mexico, Japan, and the Soviet Union (now Russia).

In compliance with the Migratory Bird Treaty Act, the Deschutes National Forest is currently following guidelines from the "Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington" (Altman 2000). This conservation strategy addresses key habitat types as well as biological objectives and conservation strategies for these habitat types found in the East Slope of the Cascades, and the focal species associated with these habitats. The conservation strategy lists priority habitats: 1) ponderosa pine; 2) mixed conifer (late successional); 3) oak-pine woodland; and 4) unique habitats, lodgepole pine, white bark pine, meadows, aspen, and subalpine fir.

Responsibilities of Federal Agencies to Protect Migratory Birds
Executive Order 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practical, adverse impacts on migratory birds' resources when conducting agency actions. This order directs agencies to further comply with the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and other pertinent statutes. The analysis in the EA is compliant with the National Memorandum of Understanding between the USDA Forest Service and the U.S. FWS to promote the conservation of migratory birds (2008). See Wildlife analysis in Chapter 3.4.1.

1.9.7 Executive Order on Invasive Species

This order (signed February 3, 1999) requires Federal agencies whose actions may affect the status of invasive species to identify those actions and within budgetary limits, "(i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species… (iii) monitor invasive species populations… (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded;…(vi) promote public education on invasive species… and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species… unless, pursuant to guidelines that it has prescribed, the agency had determined and made public… that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm would be taken in conjunction with the actions." See Invasive Species analysis in Chapter 3.4.3.

1.9.8 The Clean Air Act, as amended in 1977 and 1990

The Clean Air Act requires the Forest Service to protect air quality related values in Class I Areas (e.g. City of Bend). The primary purpose of this act is to: a) protect human health and welfare with national air quality standards; b) establishes major air quality goals; and c) provides means and measures to attain goals by addressing existing and potential air pollution problems. All Forest Service proposed

activities must follow the federal Clean Air Act, as amended. The Environmental Protection Agency (EPA) has the responsibility and authority to establish regulations and standards for carrying out the provisions of the Act. Region 10 of EPA covers Oregon, Washington, and Idaho.

1.10 Project Record

This EA hereby incorporates by reference the project record (40 CFR 1502.21). The project record references all scientific information that was considered for the analysis, including reports, literature reviews, review citations, academic peer reviews, science consistency reviews, and results of ground-based observations to validate best available science. Chapter 3 provides a summary of the specialist reports, biological assessments, and biological evaluations in adequate detail to support the decision rationale. The project record is available for review at the Bend-Fort Rock Ranger District Office, 63095 Deschutes Market Road, Bend, Oregon 97701, Monday through Friday 7:45 a.m. to 4:30 p.m.

1.11 Decision to be Made

The responsible official for deciding the type and extent of management activities in the Red Butte Pit analysis area is the District Ranger of the Bend-Fort Rock Ranger District on the Deschutes National Forest. The responsible official can decide on several courses of action ranging from no action, to selecting one of many possible combinations in the project area. The responsible official will consider the following factors when making a decision:

1. How well the alternative(s) meets the project's purpose and need.

2. How well does the alternative respond to the issue(s).

3. Have public comments been considered during this analysis.

4. What are the likely environmental effects of the proposed action and alternative(s), and have mitigation measures that would apply to project implementation been identified.

CHAPTER 2 – ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This chapter describes the alternative considered for the Red Butte Pit project. This chapter is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14).

2.2 ALTERNATIVE DEVELOPMENT PROCESS

No input was received on the proposed action; therefore, no key issues were identified to be analyzed. Since no key issues were identified, one action alternative (Alternative 2 proposed action) and the no action alternative (Alternative 1) are to be analyzed in detail.

This chapter outlines project design elements that have been built into the alternative to ensure compliance with Forest Plan standards and guidelines, laws, regulations and other policies. It also includes resource protection measures that are designed to minimize potential resource impacts by the project.

2.3 ALTERNATIVES CONSIDERED IN DETAIL

This EA assesses the potential effects of two alternatives: a no action alternative (Alternative 1) and the propose action (Alternative 2).

2.3.1 ALTERNATIVE 1 – NO ACTION

The interpretation of this no action alternative is that the proposed action would not take place. Under this alternative Red Butte Pit would not be expanded by ODOT and their material needs would not be met. The pit would remain at the current developed size of 8.9 acres. The existing contract with OKOT for mineral materials would continue. This alternative serves as a baseline from which the interdisciplinary team can evaluate the proposed action.

2.3.2 ALTERNATIVE 2

ODOT is proposing to expand the existing 8.9 acre Red Butte Pit by approximately 16 acres to encompass a total of approximately 24.9 acres of National Forest System land. This expansion would provide material that would meet ODOTs needs for over 20 years. A 10-year operating and mineral material contract has been issued to ODOT for existing and on-going use of the existing pit. Temporary use of crushing and screening equipment within the project boundary to process fine and coarse material produced in the pit could occur.

Development of the pit would include: cutting timber over the development area; clearing non-merchantable vegetation throughout the development area.

Within the approximate 16 acre expansion area, all timber and non-merchantable vegetation would be harvested and/or removed. Stripping of the overburden would occur as needed to minimize potential loss due to wind or runoff erosion while maintaining as much habitat as possible and lowering the

impacts to the viewshed. The expansion of the cinder pit would be designed to use the existing natural topography and forest vegetation to screen the pit from view from the scenic highway.

Existing steep slopes (over 50% to in excess of 67%) that are now considered unsafe would be flattened to 50% or flatter to comply with state and federal mining and reclamation regulations and to provide for operational and public safety.

2.4 COMPARISONS OF ALTERNATIVES

The following table compares Alternative 1 No Action with Alternative 2 the Action Alternative.

Table 2.1: Comparison of Alternative 1 and Alternative 2

Alternative Elements	Alternative 1	Alternative 2
Red Butte Pit (acres)	8.9	24.9
Expansion (acres)	0	16

2.5 PROJECT DESIGN ELEMENTS

In order to minimize potential resource impacts from project activities, project design criteria have been incorporated into the action alternatives unless otherwise specified. Project design criteria are devised in the pre-analysis and analysis phases to reduce environmental impacts and comply with applicable laws and regulations. They include, but are not limited to, best management practices (BMPs), standards and guidelines (S&Gs), and standard operating procedures (SOPs).

2.5.1 RESOURCE PROTECTION MEASURES

Wildlife

To reduce potential negative impacts to wildlife species affected by the proposed action, the following wildlife resource protection measures are recommended:

WL-RPM 1: Do not encourage use of the cinder pit during the Tumalo Winter Range Closure (also within the Ryan Ranch Key Elk Area) between December 1 and March 31 to reduce potential disturbance to big game.

WL-RPM 2: Restrict disturbance activities within ¼ mile of any newly discovered nests. This condition may be waived in a particular year if nesting or reproductive success surveys reveal that the species indicated is non-nesting or that no young are present that year. There are currently no known nest sites in the project area. The following is the potential raptors that may be encountered and their nest restriction dates in which habitat is identified within the project area:

- Cooper's and Sharp-shinned hawks: April 15 – August 31

Invasive Plants

The pit would be inspected prior to project initiation and any weeds would be removed, if found.

Any fill material brought into the project would be examined by the district botanist or designee for the presence of invasive plants.

Machinery involved in project activities must be washed prior to entry into the project area.

Cultural Resources

If previously unknown items of prehistoric or historical value are discovered or disturbed during construction, activities would cease in the area affected and the District Archaeologist would be notified. A mitigation plan would be developed in order to address the effects of the project on the resource.

CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter discusses the existing condition of resources in the Red Butte Pit project area and discloses the direct, indirect, and cumulative effects of the alternatives (including the no action) would be expected to have on resources. The duration of these effects may vary depending on the resource in question. This chapter concludes with a discussion of specifically required disclosures.

3.2 CUMULATIVE ACTIONS AND ACTIVITIES

The duration of direct, indirect, and cumulative effects varies, and is addressed by each resource and subject area to follow. In general, the analysis area would be the project area. The analysis area is documented under each resource area. The expansion area is approximately 16 acres and the project area (total pit area) is approximately 24.9 acres T18S, R11E, Section 28, W.M. See Figure 1: Red Butte Pit Vicinity Map for details. The project is included in the Lava Island Falls – Deschutes River Subwatershed (11,093 acres) which is part of the North Unit Diversion Dam – Deschutes River Watershed of (64,226 acres) and occurs outside of the Northwest Forest Plan (NWFP) boundary.

For the purposes of this EA, the cumulative impacts are the sum of the existing condition (which represents all past actions), present actions, and reasonably foreseeable future actions. Reasonably foreseeable as defined in 36 CFR 220.3 are those Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals. Identified proposals for the Forest Service are those that the Forest Service has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated (36 CFR 220.4 (a)(1)). The purpose of the cumulative effects analysis in the EA is to evaluate the significance of the no action and action alternative contributions to cumulative impacts. A cumulative impact is defined under federal regulations as follows:

> "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

In order to understand the contribution of past actions to the cumulative effects of the alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events

that have affected the environments and might contribute to cumulative effects. "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions" (40 CFR 1508.7). This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action by action basis. One reason for taking this approach is because focusing on past individual actions would be less accurate than looking at the existing condition, because there is limited information on environmental impacts of individual past actions and no one can reasonable identify each and every action over the last century that has contributed to the existing condition.

The primary actions that are ongoing or expected are the West Bend Vegetation Management Project (within project area) and the Rocket Vegetation Management Project (within North Unit Diversion Dam-Deschutes River Watershed). Commercial thinning, understory thinning and fuels treatments would be performed.

3.3 ALTERNATIVE EVALUATION

3.3.1 WILDLIFE

This section covers the existing conditions and effects of implementation on wildlife resources. This section incorporates by reference the Botany Biological Evaluation contained in the project record located at the Bend-Fort Rock Ranger District. Specific information on methodologies, assumptions, plant species, and other details are contained in the report. A summary of the existing condition and predicted effects of the alternatives are discussed in this section.

Introduction

This report describes potential impacts to terrestrial wildlife associated with the implementation of the Red Butte Pit Expansion Project on the Bend/Fort Rock Ranger District. This includes evaluating potential impacts to wildlife listed under the Endangered Species Act (ESA), as amended, United States Department of Agriculture (USDA) Forest Service Pacific Northwest Region Sensitive Species, Management Indicator Species (MIS), migratory birds and shorebirds.

Analysis Methods

Potential impacts to wildlife species associated with this project are focused on the following five species groups:

- United States Fish and Wildlife Service (USFWS) Endangered, Threatened or proposed terrestrial wildlife species and critical habitat.
- USDA Forest Service Pacific Northwest Region Sensitive Species (USDA FS 2011)
- Management Indicator Species as identified in the Deschutes National Forest (DNF) Land and Resource Management Plan (LRMP) (USDA FS 1990)
- Migratory birds listed as Birds of Conservation Concern (USFWS 2008a) list for Bird Conservation Region 9-Great Basin and focal species in the Conservation Strategy for Landbirds of the East-slope of the Cascade Mountains in Oregon and Washington (Altman 2000)
- High priority shorebirds listed in the U.S. Shorebird Conservation Plan (US FWS 2004).

Species analyzed were those presumed to be present if the project area was within the range of the species and appropriate habitat components were available. The level of impact depended on the existing habitat conditions (i.e., limited habitat availability versus widespread habitat availability), the

magnitude and intensity of the impacts of the proposed actions (i.e., would the proposed actions cause a loss, no change, or increase in habitat), and the risk to the resources (sustainability and availability of the habitat).

For direct and indirect effects, impact analysis for each species is primarily focused on short (1-5 years) and long-term (>5 years) impacts to habitat. Noise disturbance from equipment and personnel and direct impacts to individuals (mortality, abandonment of offspring, and displacement) may occur to nesting/denning and foraging individuals. These impacts are anticipated to be limited to a small number of individuals for each species because only a small portion of their habitat would be treated.

Cumulative Effects

The impacts of past projects are included in the existing condition discussion under each species analyzed and are not discussed as separate projects for most species. These past actions are either no longer having impacts that would overlap the impacts of the proposed action in time and space, or, if their impacts are ongoing, these impacts have been incorporated into the existing habitat conditions and it is not useful nor relevant to the decision-making process to analyze them separately.

The cumulative impacts analysis area includes the project area boundary (approximately 25 acres), which lies within the Lava Island Falls – Deschutes River Subwatershed (11,093 acres) which lies within the larger North Unit Diversion Dam-Deschutes River Watershed (64,226 acres). Most of the cumulative impacts will be addressed at the watershed level. The primary cumulative actions impacting wildlife habitat is the West Bend Vegetation Management Project and the Rocket Vegetation Management Project in the North Unit Diversion Dam-Deschutes River Watershed. Only activities on National Forest system lands are analyzed under cumulative impacts.

Where the Red Butte Pit Expansion Project would result in an incremental effect or impact when added to any of these projects or activities, it is discussed in the cumulative impacts analysis for that species or habitat. Since the cumulative effects deal with forest development which inherently involve multiple decades, short-term impacts are addressed for < 30 year time span while long-term impacts are addressed for over a time span > 30 years, unless otherwise noted in the species-specific discussions. Similarly, the timeframes used to address cumulative effects may vary by species but will generally include a time span of 20 years, which would roughly equate to more than one generation of the species.

Biological Evaluation

The BE is intended to ensure that all surface-disturbing activities and management actions are in compliance with the Endangered Species Act, National Forest Management Act (NFMA) of 1976 (including FS Manual 2670 direction for threatened, endangered, and sensitive species management), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C.4321 et seq.) as amended, and the Forest Plan as amended by the Eastside Screens.

The Deschutes and Ochoco National Forests completed a Joint Terrestrial and Aquatic Programmatic Biological Assessment (USDA FS 2014) in April 2014 for Federal Lands within the Deschutes and John Day River Basin's administered by the Deschutes and Ochoco National Forests. Every project that meets the project design criteria (PDCs) applicable to each affected species is covered by this document. If every PDC is not followed, then additional consultation may be needed and an impacts determination made to determine the need for further consultation with the USFWS. The BA covers the northern spotted owl (*Strix occidentalis caurina*) as a threatened species and the Oregon spotted frog (*Rana pretiosa*) which is a federal candidate for listing.

This report has considered the best available science such as forest-wide species assessments, and/or reports, literature reviews, review citations, peer reviews, and science consistency reviews. The best available science coupled with District and Forest data, thorough field reconnaissance and project design features by the project wildlife biologist, and local knowledge of the area were used to determine species or habitat presence and impacts.

Table 3.1and Table 3.2 (below) list the effect/impact determinations for species considered under the BE for the Red Butte Pit Expansion Project. The project area does not have any habitat for the threatened northern spotted owl, no denning or rendezvous habitat for the endangered gray wolf (but does have dispersal habitat for this species), and no habitat for the Oregon spotted frog. The project area does have habitat for six Sensitive species.

Species listed below with a *No Effect* or *No Impact* determination either do not have the habitat for a particular species, or project activities do not have the potential to overlap the biological needs of an individual, or a combination of both. Only those species with potential habitat in the project area that would potentially be impacted by project activities are further analyzed.

USFWS Endangered, Threatened and Proposed Species or Critical Habitat

Table 3.1 includes a list of wildlife species or their designated critical habitat listed as endangered, threatened or proposed by the U.S. Fish and Wildlife Service under the Endangered Species Act, as amended, with potential to occur on the Deschutes National Forest. Those species that are in bold are analyzed further and contain habitat that occurs within or adjacent to the project area and that the particular habitat and/or species may be negatively affected. Those species that are not in bold may or may not contain habitat within or adjacent to the project area, of which that habitat or species would not be affected by the proposed project and no further analysis would occur.

Table 3.1: USFWS Endangered, Threatened or Proposed Wildlife Species or Habitat suspected on the DNF and impacts from the proposed Red Butte Cinder Pit Expansion Project.

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Federally Listed Species				
Gray wolf (*Canus lupus)*	Federal Endangered, SH	Wide ranging carnivore that uses a variety of habitats that support sufficient prey base.	No effect The predicted absence of wolves means no direct or indirect effects expected for this species and therefore no cumulative effects are expected.	There currently is no established pack or breeding population on the Forest and wolves are not known to regularly occur on the DNF. This species also tends to avoid areas of continued human presence and would most likely not occur within the project area and surrounding habitat.

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Northern spotted owl (*Strix occidentalis caurina*)	Federal Threatened, MIS, S3	Multi-story forested stands of mixed conifer including Douglas-fir and true-firs with high canopy closure and large diameter trees.	No effect In the absence of direct or indirect effects no cumulative effects are expected.	The project area is located outside the NWFP boundary (> 2 miles) and outside of the range of the northern spotted owl; therefore no NRF or dispersal habitat would be removed. The PDCs in the Prog. BA do not apply.
Northern spotted owl designated critical habitat		NRF and dispersal habitat within the range of the Northern Spotted Owl.	No effect In the absence of direct or indirect effects no cumulative effects are expected.	The project area is outside the Northwest Forest Plan and over 2 miles outside of any critical habitat.
Oregon spotted frog (*Rana pretiosa*)	Federal Proposed, Regional Forester Sensitive, S2	Found in or near a perennial body of water that includes zones of shallow water and abundant emergent or floating aquatic plants, which the frogs use for basking and escape cover.	No effect In the absence of direct or indirect effects no cumulative effects are expected.	All potential habitat is over 1 mile away from the project area, and the close association of this species to permanent wetlands means no habitat will be disturbed.
Oregon spotted frog proposed critical habitat		Habitat for the Oregon spotted frog as described in USFWS (2013).	No effect In the absence of direct or indirect effects no cumulative effects are expected.	All potential habitat and proposed critical habitat is over 1 mile away from the project area.

***** Region 6 Threatened, Endangered, and Sensitive species list for the Deschutes National Forest (December 2011). Oregon Sensitive Species determined from the **NatureServe** database for Oregon (2014, S1 = critically imperiled, S2 = imperiled, S3 = vulnerable, SH = possibly extirpated.

None of the above species were furthered analyzed as there would be no direct, indirect or cumulative effects from this project on individuals or habitat.

USDA Forest Service Pacific Northwest Sensitive Wildlife Species

Table 3.2 lists the Region 6 Sensitive Species and Federal Candidate Species. All of the species that are federally threatened or endangered are also considered regionally sensitive. These species have been addressed separately in the above section. With the recent proposal for listing the Oregon spotted frog as Threatened this species was addressed under the Endangered, Threatened and Proposed Wildlife section of this report. **Those species that are in bold are analyzed further** and contain

habitat within or adjacent to the project area and that the particular habitat and/or species may be affected by project activities. Those species that are not in bold may or may not contain habitat within or adjacent to the project area, of which that habitat or species would not be impacted by the proposed project and are not be further analyzed.

Table 3.2: Region 6 Sensitive animal species and Federal Candidate species occurring or potentially occurring on the Forest and the impacts from the proposed project.

Species	Status/NS Ranking	Habitat Needs	Impacts	Effects Rationale and Cumulative Effects
Regional Forester Sensitive Species				
BIRDS				
Northern bald eagle (*Haliaeetus leucocephalus*)	Regional Forester Sensitive, MIS, BCC, S4B, S4N	Lakes, large rivers with nearby large diameter trees, usually ponderosa pine.	No impact	No habitat
American peregrine falcon (*Falco peregrinus anatum*)	Regional Forester Sensitive, MIS, BCC, S2B	Riparian and cliff habitat.	No impact	No habitat
Lewis's woodpecker (*Melanerpes lewisi*)	**Regional Forester Sensitive, MIS, Landbird focal species, BCC, S2, S3B**	**Large diameter snags in open ponderosa pine, burned forests.**	**May impact individuals or habitat but would not lead to a trend towards Federal listing or contribute to a loss of viability on the Deschutes NF.** **Minor cumulative impacts are expected.**	**This project is expected to permanently remove 12 acres of potential Lewis' woodpecker habitat. There is the potential to cause nest abandonment or loss of individuals with tree removal.**
White-headed woodpecker (*Picoides albolarvatus*)	**Regional Forester Sensitive, MIS, Landbird focal species, BCC, S2, S3B**	**Large diameter snags in open ponderosa pine forests.**	**May impact individuals or habitat but would not lead to a trend towards Federal listing or contribute to a loss of viability on the Deschutes NF.** **Minor**	**This project is expected to permanently remove 10 acres of potential white-headed woodpecker habitat. There is the potential to cause nest abandonment**

Species	Status/NS Ranking	Habitat Needs	Impacts	Effects Rationale and Cumulative Effects
			cumulative impacts are expected.	**or loss of individuals with tree removal.**
Bufflehead (*Bucephala albeola*)	Regional Forester Sensitive, MIS, S2B, S5N	Snags associated with lakes	No impact	No habitat
Harlequin duck (*Histrionicus histrionicus*)	Regional Forester Sensitive, MIS, S2B, S3N	Rapid streams, large trees	No impact	No habitat
Tule white-fronted goose (*Anser albifrons elgasi*)	Regional Forester Sensitive, S2, S3N	Seasonal migrant (spring and fall), marshes and wetlands	No impact	No habitat
American white pelican (*Pelecanus erythrorhynchos*)	Regional Forester Sensitive, S2B	Freshwater lakes with islands available for breeding	No impact	No habitat
Horned grebe (*Podiceps auritus*)	Regional Forester Sensitive, MIS, S2B, S5N	Lakes	No impact	No habitat
Tricolored blackbird (*Agelaius tricolor*)	Regional Forester Sensitive, BCC, S2B	Lakeside, bullrush	No impact	No habitat
Yellow rail (*Coturnicops noveboracensis*)	Regional Forester Sensitive, BCC, S1B	Marsh	No impact	No habitat
Northern waterthrush (*Seiurus noveboracensis*)	Regional Forester Sensitive, S2B	Riparian habitat with dense willows along streambanks	No impact	No habiat
Greater sage grouse (*Centrocercus urophasianus phaeios*)	Federal Candidate, Regional Forester Sensitive, BCC, Landbird Focal Species (CP), S3	Sagebrush flats	No impact	No habitat
MAMMALS				
Townsend's big-eared bat (*Corynorhinus townsendii*)	**Regional Forester Sensitive, MIS, S2**	**Caves, mines, bridges, rock crevices, ponderosa pine and juniper**	**May impact individuals or habitat but would not lead to a trend**	**12-16 acres of roosting and foraging habitat would**

Species	Status/NS Ranking	Habitat Needs	Impacts	Effects Rationale and Cumulative Effects
		forests.	**towards Federal listing or contribute to a loss of viability on the Deschutes NF.** **Minor cumulative impacts are expected.**	**be permanently removed. Disturbance to roosting bats could occur during tree removal.** **Implementation of the Red Butte Pit Expansion Project would impact an additional 0.02% of roosting and foraging habitat within the watershed.**
Pallid bat (*Antrozous pallidus*)	Regional Forester Sensitive, S2	Arid desert and grasslands with rock crevices, caves, old mines, trees, old buildings	No impact	No habitat
Spotted bat (*Euderma maculatum*)	Regional Forester Sensitive, S2	Caves , cliffs, and rock crevices	No impact	No habitat
Fringed myotis (Myotis thysanodes)	**Regional Forester Sensitive, S2**	**Caves, mines, rock crevices, large snags, in desert, grasslands and woodlands**	**May impact individuals or habitat but would not lead to a trend towards Federal listing.** **Minor cumulative impacts are expected.**	**12-16 acres of roosting and foraging habitat would be permanently removed. Disturbance to roosting bats could occur during tree removal.** **Implementation of the Red Butte Pit Expansion Project would impact an additional**

Species	Status/NS Ranking	Habitat Needs	Impacts	Effects Rationale and Cumulative Effects
				0.02% of roosting and foraging habitat within the watershed.
Pygmy rabbit (*Brachylagus idahoensis*)	Regional Forester Sensitive, S2	Sagebrush flats	No impact	No habitat
Pacific Fisher (*Martes pennanti*)	Federal Candidate, Regional Forester Sensitive, MIS, S2	Mixed conifer, riparian, complex physical structure	No impact	No habitat
North American Wolverine (*Gulo gulo luscus*)	Regional Forester Sensitive, MIS, S1	Wide ranging carnivore found above 5,500 feet in elevation in mixed conifer high elevation forests and high elevation subalpine and alpine environments including rock talus, and high cirque basins.	No effect In the absence of direct or indirect effects no cumulative effects are expected.	The project area occurs below 5,500 feet in elevation and does not contain denning habitat. Also, the rock pit expansion would not create a barrier to dispersal.
AMPHIBIANS				
Columbia spotted frog (*Rana luteiventris*)	Regional Forester Sensitive, S2, S3	Slow streams, marshes, ponds, lake edges	No impact	No habitat
INVERTEBRATES				
Crater Lake tightcoil (*Pristiloma arcticum crateris*)	Regional Forester Sensitive, S&M, S1	Perennial wet areas along streams.	No impact	No habitat
Evening field slug (*Deroceras hesperium*)	Regional Forester Sensitive, S&M, S1, S2	Perennially wet meadows in forested habitats	No impact	No habitat
Silver-bordered fritillary (*Boloria selene atrocostalis*)	Regional Forester Sensitive, S2	Wet meadows, bogs, and marshes that contain violets (host plant for caterpillar) and goldenrod (for adult feeding).	No impact	No habitat
Johnson's	**Regional**	**Coniferous**	**May impact**	**Proposed**

Species	Status/NS Ranking	Habitat Needs	Impacts	Effects Rationale and Cumulative Effects
hairstreak (*Callophyrys johnsoni*)	**Forester Sensitive, S2**	**forests, especially old growth**	**individuals or habitat but would not lead to a trend towards Federal listing.** **Minor cumulative impacts are expected.**	**treatments would reduce the amount of mistletoe infected trees in the project area for larvae plus reduce the amount of host plants and food sources for the butterfly.**
Western bumblebee (*Bombus occidentalis*)	**Regional Forester Sensitive, S2**	**Native wildflowers, rodent burrows for wintering.**	**May impact individuals or habitat but would not lead to a trend towards Federal listing.** **Minor cumulative impacts are expected.**	**Proposed treatments could cause direct mortality of bees, crush nesting and winter burrows and decrease the availability of flowering plants as a food source.**

***Federally listed and Regional Forester Sensitive S**pecies: Region 6 Threatened, Endangered, and Sensitive species list for the Deschutes National Forest (December 2011)
Oregon Sensitive Species: NatureServe database for Oregon (2014): S1, critically imperiled, S2 = imperiled, S3 = vulnerable, S4 = apparently secure, S5 = secure, B = breeding, N = non-breeding, SH = possibly extirpated.
Landbird focal species: Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington (Altman 2000)
Management Indicator Species: Deschutes National Forest Land and Resource Management Plan (USDA FS 1990)
Birds of Conservation Concern (BCC) U.S. Fish and Wildlife Service Birds of Conservation Concern – BCR 9 (Great Basin) (2008)

Sensitive Wildlife Species Considered in the Biological Evaluation

Lewis' woodpecker

This woodpecker is associated with mature ponderosa pine, riparian cottonwoods, and recently burned areas of any forest type (Abele et al. 2004). Recent wildfires provide snags, perch sites and abundant insects to support nesting. The Lewis' woodpecker is considered a weak excavator and depends on large snags in advanced decay or cavities created by stronger excavators. It has been suggested that the main priorities for habitat use by Lewis' woodpeckers are perch availability, open canopy, and a brushy understory (Linder and Anderson 1998). Linder and Anderson (1998) estimate that optimal canopy closure for Lewis' Woodpeckers is less than 30%. They are a DNF LRMP MIS as part of the woodpecker group and a focal species for ponderosa pine with patches of burned forest in the East Cascade Landbird Strategy (Altman 2000).

Forest-wide Lewis' woodpecker habitat was estimated as part of review of Management Indicator Species on the DNF (USDA FS 2012a). Habitat estimation for the DNF predicted 84,978 acres of

potential Lewis' woodpecker nesting habitat on the Forest. Within the project watershed there are 3,495 acres of potential habitat and within the subwatershed, there is 554 acres of potential habitat (see Table 3.3 below).

Table 3.3: Lewis' woodpecker habitat by Watershed and Subwatersheds in the project vicinity.

Watershed (HUC 10)	Subwatershed (HUC 12)[1]	FS Acres in Subwatershed	Nesting Habitat Acres	Percent of Subwatershed with Nesting Habitat
North Unit Diversion Dam – Deschutes River	Benham Falls – Deschutes River	22,550	1,678	7%
	Lava Island Falls – Deschutes River	11,093	554	5%
	Lockit Butte	8,220	29	0%
	Overturf Butte – Deschutes River	19,305	957	5%
	Town of Sunriver	9,585	60	1%
	Town of Sunriver – Deschutes River	12,574	217	2%

[1] – Subwatersheds in bold are part of project area.

Currently, 12 of the 16 acres proposed in the expansion are identified as potential Lewis' woodpecker nesting and foraging habitat. There have been no recent wildfires within the area nor are there any large snags. No woodpecker species were seen during field reconnaissance. The closest known nesting Lewis' woodpeckers are east of the project area within the old Awbrey Hall Fire. A long-term Lewis' woodpecker nest box study that began in 2003 has placed 25 nest boxes within the old fire. Annual monitoring indicates a high percentage (60%) of the boxes used each year with 15 of 25 used in 2012.

It is possible that there could be cavities in live trees that Lewis' woodpeckers could use, plus, the habitat adjacent to the immediate cinder pit has a low canopy cover and contains a brushy understory. This species is not known to be sensitive to human disturbance farther than 15 meters from a nest but prolonged quarry activities could lead to nest abandonment, making the area immediately adjacent to the access road and active cinder pit activities low quality habitat.

A DecAid Analysis (Mellen-McLean et al. 2012) for snags was not completed for this project, but one was completed for the West Bend Vegetation Management Project which occurs adjacent to this project area. This analysis can be found in the West Bend Vegetation Management Project FEIS (USDA FS 2013).

Direct and Indirect Impacts - Alternative 1

The selection of this alternative would result in no impact to the Lewis' woodpecker because no tree or shrub removal would occur to reduce available nesting and foraging habitat.

Direct and Indirect Impacts - Alternative 2

This project would remove approximately 12 acres of potential Lewis' woodpecker habitat. There are no snags that would be removed, but there are trees that could provide nesting habitat. The overburden would be removed as needed, so the brush would not be removed all at once and continue to provide substrate for the insects the woodpeckers forage on. If there happened to be Lewis' woodpeckers

nesting within or immediately adjacent to the project area during tree removal, it could lead to nest abandonment and loss of individuals.

The loss of habitat would not noticeably change the availability of nesting or foraging habitat at the Forest or watershed level, but would be a loss of 2% of the available habitat within the subwatershed (see Table 3.4).

Table 3.4: Current Lewis' woodpecker nesting habitat and loss associated with the project expansion.

Area	Acres of Nesting Habitat	Acres of Habitat Removed with Project	Percentage of Habitat Loss
Forest	84,978	12	0.01%
North Unit Diversion Dam Watershed	3,495	12	0.3%
Lava Island Falls – Deschutes River Subwatershed	554	12	2%

Cumulative Impacts

The primary actions for cumulative impacts consideration to Lewis' woodpecker habitat are the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Vegetation treatments between the West Bend and Rocket projects would treat approximately 53% of the available potential Lewis' woodpecker habitat within the North Unit Diversion Dam Watershed, with the intent of reducing smaller diameter material and thus stand density to help promote older ponderosa pine stands that provide future Lewis' woodpecker habitat.

Implementation of the Red Butte Pit Expansion Project would impact an additional 0.3% of habitat within the watershed. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. The treatments under both vegetation projects are not expected to negatively impact current reproductive habitat and would maintain a variety of shrub conditions throughout the project area. There is the potential of loss of nests and individuals if project activities occur during the nesting season. Project activities from the cinder pit expansion and the vegetation management projects would not all occur during the nesting season, minimizing the potential of loss to individuals. Therefore, negative cumulative impacts from the Red Butte Pit Expansion Project are expected to be minimal considering the small amount of habitat available.

Effects Determination and Rationale

There are no known nests or sightings of Lewis' woodpeckers within the project area. This project is expected to permanently remove 12 acres of potential Lewis' woodpecker habitat. There are no snags within the project area to remove, so the potential habitat would be in individual live trees that may already have cavities within them. With the possibility of Lewis' woodpeckers nesting within or adjacent to the project area and with the potential to cause nest abandonment or loss of individuals during project activities, implementation of this project ***may adversely impact individuals, but not likely to contribute a trend toward federal listing or loss of viability to the population or species*.**

White-headed woodpecker

This species is associated with old-growth ponderosa pine habitats with reduced understory shrub component. Dixon (1995) found white-headed woodpecker densities increased in older ponderosa pine

trees and showed a positive association with large ponderosa pine. The mean diameter of all ponderosa pine trees was 12.9" dbh (diameter at breast height) and ranged from 10-19.7" dbh in nest stands while the mean snag diameter in nest stands was 10" dbh and ranged from 6-12" dbh (Kozma 2011). White-headed woodpeckers are a DNF LRMP MIS as part of the woodpecker group and a focal species for ponderosa pine with large patches of old forest with large snags in the East Cascade Landbird Strategy (Altman 2000).

Forests with live trees have more abundant and complex assemblages of predators than high severity burned areas (Wightman et al. 2010). The golden-mantled ground squirrel and yellow pine chipmunk are known nest predators. Golden-mantled ground squirrels are positively associated with down wood volume and yellow pine chipmunks are positively associated with shrub cover (Wightman et al. 2010). Nests in unburned forests may be more vulnerable than those in burned forests as these may also experience lower ambient temperatures which affect incubation behavior and reproductive effort (Hollenbeck et al. 2011). The project area is comprised of live trees with abundant shrub cover, rendering this area and woodpeckers that nest here vulnerable to predators.

Forest-wide white-headed woodpecker habitat was estimated as part of review of Management Indicator Species on the DNF (USDA FS 2012b). White-headed woodpecker nesting habitat was mapped using ponderosa pine dominated forests which included all ponderosa pine PAGs in all seral stages in addition to other PAG in the early- and mid-seral stages where ponderosa pine is dominant. Stand size had to be a minimum 10 inch dbh. The model estimates 198,330 acres of white-headed woodpecker nesting habitat on the DNF. The North Unit Diversion Dam Watershed has 14,935 acres of potential white-headed woodpecker habitat or 8% of the Forest, while the Lava Island Falls – Deschutes River Subwatershed contains 2,261 acres of habitat (see Table 3.5 below).

Table 3.5: White-headed woodpecker habitat by Watershed and Subwatersheds in the project vicinity

Watershed (HUC 10)	Subwatershed (HUC 12)[1]	FS Acres in Subwatershed	Nesting Habitat Acres	Percent of Subwatershed with Nesting Habitat
North Unit Diversion Dam – Deschutes River	Benham Falls – Deschutes River	22,550	3,547	15%
	Lava Island Falls – Deschutes River	11,093	2,261	20%
	Lockit Butte	8,220	813	10%
	Overturf Butte – Deschutes River	19,305	4,554	24%
	Town of Sunriver	9,585	1,213	13%
	Town of Sunriver – Deschutes River	12,574	2,547	20%

[1] – Subwatersheds in bold are part of project area.

Currently, 10 of the 16 acres proposed in the expansion are identified as potential white-headed woodpecker habitat. The area is a blackbark ponderosa pine stands dominated by trees <21" in diameter (there are scattered trees >21" dbh) with no large snags and plenty of shrub cover. No woodpecker species were seen during field reconnaissance. The closest known white-headed woodpecker sighting occurred several miles to the east of the project.

It is possible that there could be cavities in live trees that white-headed woodpeckers could use, but since there is a shrubby understory within the more open area of the expansion, which provides habitat for wildlife species that would prey upon eggs and young of white-headed woodpeckers, this area does not provide high quality nesting habitat.

A DecAid Analysis (for snags) was not completed for this project, but one was completed for the West Bend Vegetation Management Project which occurs adjacent to this project area. This analysis can be found in the West Bend Vegetation Management Project FEIS (USDA FS 2013).

Direct and Indirect Impacts - Alternative 1

The selection of this alternative would result in no impact to the white-headed woodpecker because no tree removal would occur to reduce potential available nesting and foraging habitat.

Direct and Indirect Impacts - Alternative 2

There are no known white-headed woodpecker nests or observations in the project area. This project would remove approximately 10 acres of potential white-headed woodpecker habitat. There are no snags that would be removed, but there are trees that could provide nesting habitat. The overburden would be removed as needed, so the brush would not be removed all at once and continue to provide habitat for predators. If there happened to be white-headed woodpeckers nesting within or immediately adjacent to the project area during tree removal, it could lead to nest abandonment and loss of individuals.

The loss of habitat would not noticeably change the availability of nesting or foraging habitat at the Forest, watershed or subwatershed level (see Table 3.6).

Table 3.6: Current white-headed woodpecker nesting habitat and loss associated with the project expansion.

Area	Acres of Nesting Habitat	Acres of Habitat Removed with Project	Percentage of Habitat Loss
Forest	198,330	10	0.005%
North Unit Diversion Dam Watershed	14,935	10	0.07%
Lava Island Falls – Deschutes River Subwatershed	2,261	10	0.4%

Cumulative Impacts

The primary actions for cumulative impacts consideration to white-headed woodpecker habitat are the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Vegetation treatments between the West Bend and Rocket projects would treat approximately 60% of the available potential white-headed woodpecker habitat within the North Unit Diversion Dam Watershed, with the intent of reducing smaller diameter material and thus stand density to help promote older ponderosa pine stands that provide future white-headed woodpecker habitat. These treatments focus on managing for ponderosa pine development and sustainability and would result in long-term benefit for the white-headed woodpecker.

Implementation of the Red Butte Pit Expansion Project would impact an additional 0.07% of habitat within the watershed. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. The treatments under both vegetation projects are not expected to negatively impact current reproductive habitat and would maintain a variety of shrub conditions throughout the project area. There is the potential of loss of nests and individuals if project activities occur during the nesting season. Project activities from the cinder pit expansion and the vegetation management projects would not all occur during the nesting season, minimizing the potential of loss to individuals.

Therefore, negative cumulative impacts from the Red Butte Pit Expansion Project are expected to be minimal considering the small amount of habitat available.

Effects Determination and Rationale

There are no known nests or sightings of white-headed woodpeckers within the project area. This project is expected to permanently remove 10 acres of potential white-headed woodpecker habitat. There are no snags within the project area to remove, so the potential habitat would be in individual live trees that may already have cavities within them. With the possibility of white-headed woodpeckers nesting within or adjacent to the project area and with the potential to cause nest abandonment or loss of individuals during project activities, implementation of this project ***may adversely impact individuals, but not likely to contribute a trend toward federal listing or loss of viability to the population or species.***

Bats

Townsend's big-eared bat

This is a non-migratory bat that uses caves, mines or abandoned buildings for larger roosts, such as maternity colonies or hibernacula. Solitary bats use can use rock crevices, fissures, buildings, bridges and large trees as day or night roost sites. There are approximately 350 caves on the DNF and based on previous work 10-15% of these caves could support maternity colonies or hibernacula. A radio-telemetry study of Townsend's big-eared bats suggested the species has low roost site fidelity as rugged lava flows provide day or night roosting habitat allowing flexibility in finding foraging areas (Dobkin 1992). Maternity colonies and hibernacula are the most important roost types for bat populations because these are often larger concentrations of individuals and quality roost locations tend to be rare on the landscape.

In addition to cave or cave-like habitat, primary habitat components include suitable foraging habitat that provides insect prey and water sources for both drinking and foraging. Townsend's are foraging habitat generalists due to their successful foraging in a wide range of habitats where insects concentrate including riparian areas/intermittent streams, wetlands, lakes, forest/shrub edges, ridges, and forest canopy (Burford and Lacki 1998, Clark et al. 1993, Seidman and Zabel 2001). These bats can forage upwards of 5 miles from roosting sites (Gruver and Keinath 2006).

The primary threat to this species is human disturbance at sensitive roost locations such as hibernacula or maternity colonies (Pierson et al. 1999). Other threats include loss of foraging and roosting habitat through vegetation management practices. Recreation activities can impact Townsend's big-eared bats if they increase human disturbance to sensitive roosts or remove potential roost trees.

White-nose syndrome is affecting many bat species in the eastern United States. The fungus (*Pseudogymnoascus destructans*) interrupts hibernating bats resulting in over-expenditure of fat reserves needed to hibernate. The fungus has been recorded in western Oklahoma and not in Oregon. The Townsend's big-eared bat has not been documented with white-nose syndrome and the extent of potential impacts to the species is uncertain.

The nearest documented Townsend's big-eared bats occur at Lava River Cave which is approximately six miles southeast of the proposed project. The larger rock outcrops to the north and south of the current cinder pit could provide day/night roosting habitat in the larger fissures, but these would not support maternity colonies or hibernacula because they are too shallow to provide consistent temperatures. There are also large trees within the project area that could provide roosting habitat. The habitat surrounding the cinder pit provide foraging habitat for this bat species including the forest/shrub

edges and forest canopy. Since there are documented Townsend's big-eared bats in the watershed and potential habitat in the project area it is likely that some roosting and foraging occurs in the area, but the lack of larger caves or abandoned buildings suggests that roosting is limited to individuals using large trees or rock crevices as day or night roosts.

Fringed myotis

Caves and abandoned mines are suitable maternity and hibernacula for fringed myotis as these sites maintain appropriate humidity and temperature conditions. Large trees, bridges and rock crevices can provide day and night roosts. Of the four sensitive bat species on the regional list the fringed myotis is most likely to use large trees for day/night roosts and potentially larger roosts sites.

Foraging activity typically begins 30 minutes after sunset with suspension of foraging during the middle of the night. There is a brief foraging period prior to sunrise. Wetlands, riparian zones and areas with high insect concentrations provide quality foraging habitat. Fringed myotis are prey generalists that will consume a variety of insects (Keinath 2004).

The primary threat to fringed myotis is roost loss through abandoned mine closures and persistent roost disturbance from recreational caving. Other threats include loss of roosting habitat through timber management practices, prey reductions through the use of pesticides and white-nose syndrome.

There are no fringed myotis observations in the project area and potential habitat is similar to that described under the Townsend's big-eared bat. This species would be more likely to roost in large trees than Townsend's big-eared bat.

Direct and Indirect Impacts - Alternative 1

Under this alternative no direct or indirect impacts to these two bat species are anticipated. Day and night roosting habitat would continue to occur within the larger trees and rock fissures as well as foraging habitat.

Direct and Indirect Impacts - Alternative 2

There are no caves within the project area, but potential day and night roosting habitat occurs within the larger live trees and rock fissures. These would both be removed with project activities. The trees would be removed first (approximately 12 acres) as soon as logging activities could begin (there are 15-20 trees ≥21" dbh). The rock outcrops and shrubs would not be removed immediately as overburden/shrub removal would occur as necessary (occurs throughout the 16 acre expansion area) to remove more cinder from the pit. Removal would slowly occur over the next 20 years.

Although tree roosting habitat would be permanently removed from this site and the rock crevice roosting and foraging habitat would be removed over the next several years, the loss of habitat would not noticeably change the availability of roosting or foraging habitat at the Forest, watershed or subwatershed level.

Currently, habitat acres and home range acres for each of these bat species is unknown within the watershed and across the Deschutes National Forest. The MIS Analysis for the Townsend's big-eared bat (USDA FS 2012c) is based on cave habitat across the Forest, not on roosting or foraging habitat acreages. Foraging habitat is assumed to be abundant because of these species wide-range foraging capabilities.

Cumulative Impacts

The primary actions for cumulative impacts consideration to Townsend's big-eared bat and fringed myotis are the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Vegetation treatments between the West Bend and Rocket projects would treat approximately 30% of the available roosting and foraging habitat within the North Unit Diversion Dam Watershed. The intent of the vegetation treatments is to focus on managing for ponderosa pine development and sustainability and would result in long-term benefits to bat species roosting and foraging habitat. Both of these projects may result in short-term negative cumulative effects to these bat species' due to potential disturbance and reduction of foraging habitat in the North Unit Diversion Dam Watershed from treatment activities.

With these short-term negative cumulative effects from potential disturbance of roosts and reduction of foraging habitat from the Rocket Project and West Bend Project are the additional cumulative effects to bat species that also utilize Lava River Cave for hibernation and are consistently disturbed by the ongoing illegal recreational visitation to the cave during the months of October through April.

Implementation of the Red Butte Pit Expansion Project would impact an additional 0.02% of roosting and foraging habitat within the watershed. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. The treatments under both vegetation projects are expected to have short-term negative cumulative impacts, and albeit minor in acres, this project would additionally add to this, especially if any of the project activities occur concurrently.

Effects Determination and Rationale

This project is expected to permanently remove 12-16 acres of roosting and foraging habitat. The shrub component, which provides habitat for bat prey species, would not be immediately removed, but as the cinder pit is expanded the shrubs and overburden in the expansion area would be removed. The disturbance that could occur to bats during removal of roosting habitat ***may adversely impact individuals, but not likely to contribute a trend toward federal listing or loss of viability to the population or species.***

Johnson's Hairstreak

Suitable habitat for this species is described as coniferous forests, especially old growth (Opler et al. 2006) and old growth coniferous forests with red firs, western hemlocks, or gray pines on which its parasitic (mistletoe) hosts grows (NatureServe 2014). Johnson's hairstreak is believed to feed generally on all dwarf mistletoe species throughout its range, and to perhaps specialize on locally available dwarf mistletoes in specific localities (Schmitt and Spiegel 2008). Schmitt and Spiegel (2008) state that claims of dwarf mistletoes occurring solely in old growth or are dependent upon old growth are erroneous and that in the absence of recent large scale disturbance, dwarf mistletoe infestation levels can occur in early, mid, and late successional stands. The caterpillar food plant is western dwarf mistletoe. Adults find nectar on low growing plants such as whitethorn ceanothus and Mt. Hood pussypaws (NatureServe 2014 and USDA NRCS 2008). Miller and Hammond (2007) described management practices to benefit this species need to promote the maintenance of mature and old-growth conifers at middle to low elevations on the west slope of the Cascade Mountains and Coast Range.

Threats to this species includes timber harvest in mistletoe infested areas, large stand replacement fires, Btk (insecticide) use, herbicide use on forage species, and possible hybridization with the Thicket Hairstreak (NatureServe 2014 and USDA NRCS 2008).

Opler et al. (2006) shows Johnson's hairstreak documentation for western and central Oregon plus the Blue Mountains in northeastern Oregon. The species is suspected to occur on the Deschutes National

Forest in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, white fir, silver fir, western hemlock, and subalpine fir where the average tree size is 15"dbh or greater (an estimated 200,000 acres on the Forest), but currently there is no confirmed documentation on the Forest. Surveys for the larvae were conducted in an area on the Crescent Ranger District in 2010. Larvae were collected from dwarf mistletoe however, species identification determined the larvae were not Johnson hairstreak. Because the species is closely associated with dwarf mistletoe which is widespread on the Forest, the Johnson's hairstreak is assumed to occur.

Dwarf mistletoe has been observed within and adjacent to the project area and is assumed to be present in all seral stage classes which could serve as a host for the caterpillar. The shrub species adjacent to the cinder pit would provide foraging for the adult butterflies.

Direct and Indirect Impacts—Alternative 1

The selection of this alternative would result in no impact to Johnson's hairstreak because no tree removal would occur to reduce mistletoe infected trees. Although this butterfly has yet to be confirmed on the Forest, potential suitable habitat would be maintained based on the presence of dwarf mistletoe within the project area.

Direct and Indirect Impacts—Alternative 2

This project would permanently remove an estimated 12 acres of potential Johnson's hairstreak larval habitat within trees that contain mistletoe. It would also, over time, remove an estimated 4-8 acres of foraging habitat for adult butterflies on the flowering shrubs (shrubs and overburden would not be removed all at once).

This action would eliminate mistletoe presence within the project area and foraging habitat, which could have a negative impact on this butterfly species, but mistletoe infections occur adjacent to the project area and are wide-spread across the Forest, as well as flowering shrubs.

Cumulative Impacts

The primary actions for cumulative impacts consideration to Johnson's hairstreak are the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Vegetation treatments between the West Bend and Rocket projects would treat approximately 12% of the available forested habitat that mistletoe may occur in on the Forest. These projects, due to the amount of habitat across the Deschutes National Forest, the site specific nature of the treatments within these projects, and since the treatment actions would be consistent with recommendations from Miller and Hammond (2007) that promoting the maintenance of mature and old-growth conifer forests would benefit this species.

These large vegetation projects would result in very minor impacts to the Johnson's hairstreak and its habitat. Therefore, there are no adverse cumulative impacts to the Johnson's hairstreak population or its habitat as a result expanding the Red Butte Pit.

Effects Determination and Rationale

The Red Butter Cinder Pit Expansion Project would remove habitat that could potentially be occupied by Johnson's hairstreak individuals or their larvae. Although this would be a permanent removal, the occurrence of mistletoe is widespread across the Forest in all age classes of trees providing an abundance of potential host for Johnson hairstreak larvae. Adult foraging habitat is also widespread and abundant on the Forest. Based on these assumptions, the Red Butte Pit Expansion Project ***may***

impact individuals or habitat, but would not likely contribute to a trend toward federal listing for the Johnson's hairstreak.

Western bumblebee

The western bumblebee was once widespread and common throughout the western United States and western Canada before 1998. Since 1998, populations of this bumblebee species have declined drastically throughout parts of its former range. Populations in central California, Oregon, Washington, and southern British Columbia have mostly disappeared. NatureServe (2014) reported this species has declined about 70-100% since the late 1990s in many places, especially from British Columbia to California. Other recent observations in Oregon were documented in Wallowa County in 2008 and near Mt. Hood in 2009 (NatureServe 2014). Local observations have been as recent as 2011 in the Sunriver area and in 2014 in the Sparks Lake area.

Habitat alterations including those that could destroy, fragment, alter, degrade or reduce the food supply produced by flowers, as well as destruction of nest sites and hibernation sites for overwintering queens, such as abandoned rodent burrows and bird nests, adversely affect these bees. Agriculture and urban development alter landscapes and habitat required by bumblebees. The sizes of bumblebee populations diminish and inbreeding becomes more common as habitats become fragmented. This in turn decreases the genetic diversity and increases the risk of population decline (NatureServe 2014).

This species has been observed on the District, but there is currently no District or Forest data to determine acres of suitable habitat. Since bitterbrush, snowbrush and greenleaf manzanita are the shrub species that occur in the project area and are flowering plants, it is assumed that they may potentially provide western bumblebee habitat. Habitat for nest sites and hibernation sites are also readily available within the project area.

Direct and Indirect Impacts—Alternative 1

The selection of this alternative would result in no immediate impact to western bumblebees because no actions would occur to reduce flowering plant populations or alter or destroy nest and hibernation sites. Potentially suitable habitat would be maintained based on the widespread presence of flowering shrubs within the expansion area.

Direct and Indirect Impacts—Alternative 2

If the expansion of the cinder pit occurs, the trees would be removed as soon as possible, but the shrubs and overburden would be removed as needed over the next few decades. With these actions, tree removal could result in the crushing of flowering plants and potential destruction of nest/hibernation burrows by large machinery. Removing shrubs and the overburden could result in the direct mortality of bees and reduce the amount of bitterbrush, snowbrush and other flowering plants available in the project area. The amount of shrub area and overburden removed on a yearly basis depends upon the snow year and how much cinder is needed to sand the roads. The estimate is 0.5 – 1 acre per year. This slow removal of habitat would maintain the presence of undisturbed ground for the short-term, but the end result would be a cinder pit increasing in size from 8.9 acres to 24.9 acres, permanently removing 16 acres of potential bumblebee habitat.

Cumulative Impacts

The primary actions for cumulative impacts consideration on western bumblebee habitat within the North Unit Diversion Dam – Deschutes River Watershed are the West Bend Vegetation Management Project, and the Rocket Vegetation Management Project. The West Bend Vegetation Management

Project would treat 14,545 acres of western bumble habitat by pre-commercial thinning, commercial thinning, mowing and underburning in the watershed. Implementation of action alternatives for the Rocket project area would treat approximately 9,940 acres of western bumblebee habitat. It is unknown how much actual western bumblebee habitat is available within the 64,226 acre watershed that both of these projects occur within, but the two projects together would treat 38% of the watershed. Much of this acreage could provide areas that contain burrows suitable for hives and overwintering queens and flowering shrubs for foraging (minus roads, lava flows, and water).

The Red Butte Pit Expansion Project could potentially have an additional <1% reduction of available habitat within the watershed for the bumblebee, having short-term negative cumulative impacts on the species. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. Due to the amount of potential habitat available in the watershed and across the Forest, the eventual loss of this area for use by bumblebees would result in minor overall impacts to the western bumblebee and its habitat.

Effects Determination and Rationale

The action alternative would eventually result in a permanent loss of 16 acres of potential western bumblebee habitat. The loss would occur over time as activities associated with the expansion would occur in stages, starting with tree removal, which could crush flowering shrubs and destroy nest/hibernation burrows. Shrub and overburden removal would occur slowly over the next 20 years removing 0.5 to 1 acre of habitat per year. It is assumed that species presence would still be maintained in the portions of the project area that remain intact. Based on these assumptions, the Red Butte Pit Expansion Project ***may impact individuals or habitat, but would not likely contribute to a trend toward federal listing for the western bumblebee.***

Wildlife Specialist Report

This wildlife report analyzes the potential impacts from the proposed Red Butte Pit Expansion Project to Management Indicator Species (MIS) and habitats listed under the Deschutes National Forest (Forest) Land and Resource Management Plan (*Forest Plan*, UDA FS 1990) as amended by the Regional Forester's Forest Plan Amendment # 2 (*Eastside Screens*, USDA FS 1995), Focal Landbird Species, and U.S. Fish and Wildlife Birds of Conservation Concern. It meets the requirements of Forest Service Manual (FSM) 2630.3., FSM 2670-2671, FSM W.O. Amendments 2600-2005-1 and the Conservation Strategy for Focal Landbird Species of the East-slope Cascades. A professional-level wildlife biologist has completed the report and it has been approved by a journey-level biologist. It will be filed with the originating Request for Pre-Field Review and included in the project files with the supporting NEPA documentation.

Management Indicator Species

The DNF LRMP (USDA FS 1990) identified wildlife species as management indicator species (MIS). These species were selected because they represent other species with similar habitat requirements. Management indicator species are used to assess the impacts of management activities for a wide range of wildlife species with similar habitat needs (FSM 2620.5).

Forest-wide assessments for MIS identified in the DNF LRMP was completed for the entire Deschutes National Forest (USDA FS 2012a-h). Suitable habitat for each species was defined as areas that could potentially support reproduction, but also included habitat related to species specific direction in the DNF LRMP. An assessment was completed for each species based on the amount of potentially suitable habitat that occurs across the DNF, associated threats, and population trend data where it was available. The assessment used the best available science and guidance such as research found in

books, scientific journals, and scientific websites. Habitat definitions were developed and suitable reproductive habitat models were generated for each MIS species.

The WildHab model is used to describe potential impacts to the viability of Management Indicator Species across the DNF. While a project may have localized impacts to MIS habitat at the project level this may not noticeably reduce the habitat available to the species when compared to the entire forest. Multiple species are analyzed as MIS and under other categories such as threatened or sensitive. Analysis under the MIS section focuses on the forest-wide availability of habitat while other sections focus on impacts to individuals.

Table 3.7 identifies all MIS listed in the DNF LRMP (USDA FS 1990) and whether they are impacted by the Red Butte Pit Expansion Project and the rationale of the stated impacts. **Those species that are in bold are analyzed further** and contain habitat that occurs within or adjacent to the project area and that the particular habitat and/or species may be negatively impacted. The species and/or habitat that are not in bold may or may not contain habitat within or adjacent to the project area, of which that habitat or species would not be impacted by the proposed projects and no further analysis is necessary.

Snags and down logs are also listed as habitat for MIS in the DNF LRMP. Detailed analysis for snags and down logs is not carried forward because during field reconnaissance, no snags and very few downed logs were encountered.

Table 3.7: Impact Conclusions for LRMP Management Indicator Species from the proposed Red Butte Pit Expansion Project.

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
LRMP Management Indicator Species				
Northern spotted owl (*Strix occidentalis caurina*) Analyzed within the BE.	Federal Threatened, S3 Vulnerable	Multi-story forested stands of mixed conifer including Douglas-fir and true-firs with high canopy closure and large diameter trees.	No effect	No habitat.
Bald eagle (*Haliaeetus leucocephalus*)	Sensitive, S4 Apparently secure	Habitat includes lakes and large rivers with nearby large diameter trees, usually ponderosa pine.	No impact.	No habitat.
Golden eagle (*Aquila chrysaetos*)	S4 Apparently secure	Habitat includes elevated nest sites in open ponderosa	No impact.	No habitat.

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
		pine or mixed conifer or cliff habitat.		
American peregrine falcon (*Falco peregrinus anatum*)	S1 Critically imperiled	Habitat includes riparian and cliff areas.	No impact.	No habitat.
Great gray owl *(Strix nebulosa*)	S3 Vulnerable	Habitat includes mature and old growth forests with meadows and openings.	No impact.	No habitat.
Northern goshawk (*Accipiter gentiles*)	S3 Vulnerable	Mature stands with high canopy closure/large trees.	No impact.	No habitat.
Cooper's hawk (*Accipiter cooperi*)	**S4 Apparently secure**	**Dense stands of mature ponderosa pine overstory. Stands of all age classes in each timber type.**	**No impacts are expected to this species although habitat would be removed.**	**This project would remove approximately 4 acres of potential habitat for both of these accipiter species. The habitat would be considered low quality because of the activities that occur here when the cinder pit is active, which is generally the spring and summer.** **Implementation of the Red Butte Pit Expansion Project would impact an additional 0.0001% of habitat within the watershed.**
Sharp-shinned hawk (*Accipter striatus*)	**S4 Apparently secure**	**Dense conifer stands with dense over stories and sparse understories. Can also nest in habitat requirements**	**No impacts are expected to this species although habitat would be removed.**	**This project would remove approximately 4 acres of potential habitat for both of these accipiter species. The habitat would be considered low quality because of the activities that occur**

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
		for Cooper's hawks.		**here when the cinder pit is active, which is generally the spring and summer.** **Implementation of the Red Butte Pit Expansion Project would impact an additional 0.0001% of habitat within the watershed.**
Red-tailed hawk (*Buteo jamaicensis*)	S5 Secure	Habitat includes large snags and open country interspersed with forests.	No impact	There are no known nests adjacent to the project areas plus no suitable nest trees would be removed. The area also receives much disturbance from cinder pit activities and the Cascade Lakes Highway.
Woodpeckers/ cavity nesters. Species with potential habitat include the Lewis's woodpecker, Williamson's sapsucker, hairy woodpecker, white-headed woodpecker, and northern flicker. Lewis' woodpecker and white-headed woodpecker are analyzed within the BE.	**Varies by species**	**Habitat for these species includes larger diameter trees and snags in ponderosa pine and mixed conifer forests.**	**May impact**	**This project would remove approximately 10 acres of potential habitat for these species. There are no snags that would be removed, but there are trees that could provide nesting habitat. If there happened to be one of these woodpecker species nesting within or immediately adjacent to the project area during tree removal, it could lead to nest abandonment and loss of individuals.** **Implementation of the Red Butte Pit Expansion Project would impact an additional 0.002 to 0.0006% of habitat within the watershed.**

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Waterfowl	Varies by species	Habitat includes lakes, ponds, and streams.	No impact.	No habitat.
Osprey (*Pandion haliaetus*)	S4 Apparently secure	Habitat includes large snags associated with fish bearing water bodies.	No impact.	No habitat.
Great blue heron (*Ardea herodias*)	S4 Apparently secure	This species requires riparian edge habitats (lakes, streams, marshes, estuaries).	No impact.	No habitat.
American marten (*Martes americana*)	S3 Vulnerable	Habitat includes mixed conifer of high elevation late successional forests with abundant down woody material.	No impact.	No habitat.
Townsend's big-eared bat (*Corynorhinus townsendii*) Analyzed within the BE	**Regional Forester Sensitive, MIS, S2**	**Roosting and hibernacula includes caves, buildings, bridges, and ponderosa pine and juniper habitats.**	**May impact individuals or habitat but would not lead to a trend towards Federal listing or contribute to a loss of viability on the Deschutes NF.** **Minor cumulative impacts are expected.**	**12-16 acres of roosting and foraging habitat would be permanently removed. Disturbance to roosting bats could occur during tree removal.** **Implementation of the Red Butte Pit Expansion Project would impact an additional 0.02% of roosting and foraging habitat within the watershed.**
Wolverine (*Gulo gulo luscus*)	S1 Critically Imperiled	Habitat includes mixed conifer high elevation forests.	No impact	No habitat.

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Elk (*Cervus elaphus*)	**S5 Secure**	**The project occurs at the edge of the Ryan Ranch Key Elk Area.**	**This project may have minor short-term impacts to elk but would not contribute to a loss of viability to the population or species.**	**This project would remove an estimated 4 acres of thermal cover for elk. Hiding cover is not available and would not be an issue. The road density within the key elk area would slightly increase from the creation of a road that would be constructed to access the lower floor of the cinder pit. This access road would be approximately 0.2 miles long.** **There are no anticipated cumulative impacts associated with this project.**
Mule Deer (*Odocoileus hemionus*)	**S5 Secure**	**This project occurs within biological deer winter range.**	**This project may have minor short-term impacts to deer but would not contribute to a loss of viability to the population or species.**	**The impacts that would occur to mule deer from the expansion would be the disturbance that would occur during timber removal. These impacts would be short-term and would not prohibit deer from utilizing the area once this activity is completed.** **There are no anticipated cumulative impacts associated with this project.**
Other Habitats				
Special or Unique Habitats		Springs, seeps, cliffs, and talus slopes	No impact.	No special or unique habitats occur within the project area
Snags, Down Wood and Log			No impact.	Larger snags and down wood do not occur

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Associated Species				within the project area.
Late and Old Structural Stage Stands and Connectivity			No impact.	No LOS stands occur within the project area. Project activities would not degrade connectivity between LOS stands.

Coopers hawk

Cooper's hawk were selected as a terrestrial MIS for the DNF for providing stand diversity and retention of small blocks of 50–80 year old black bark pine stands and mixed conifer stands. An assessment occurred in 2012 (USDA FS 2012d) and described habitat utilized by this species as described below.

Cooper's hawk nest sites varied from pure stands of ponderosa pine at lower elevations, to mixed stands of ponderosa pine and white fir at mid-elevations, to mixed and pure stands of white fir and lodgepole pine at high elevations. Stands of all age classes in each timber type were represented, however the most common type was mature ponderosa pine overstory with mixed understory of ponderosa pine and white fir. Nests were built in trees with high crown volume, utilizing mistletoe for nest structures.

Cooper's hawk nesting habitat was modeled using all Plant Association Groups, except juniper, mountain hemlock and vegetation at higher elevations. All seral stages and dense stands with minimum structure of 10" dbh were used, except in lodgepole pine where the minimum diameter was 5 inches. The maximum dbh used was 20". Hardwood stands where the canopy cover was greater than 50% was included in the model. Based on this habitat modeling there are 275,340 acres of potential Cooper's hawk nesting habitat on the DNF, with 27,310 acres within the North Unit Diversion Dam-Deschutes River Watershed, and 3,873 acres within the Lava Island Falls – Deschutes River Subwatershed.

The primary threat to Cooper's hawk is habitat alteration and/or destruction from activities such as timber harvest, which can reduce nest site and prey availability thereby limiting population growth.

The model did not include habitat within or adjacent to the cinder pit as suitable habitat, but from field reconnaissance, there is an estimated 4 acres of potential suitable habitat within the project area and suitable habitat adjacent to the project area. Currently, there are no documented Cooper's hawk nests within or adjacent to the project area. The habitat is considered low quality because of the disturbance that occurs from cinder pit activities. If a Cooper's hawk nest is discovered then timing limitations found in **WL-RPM #2 would apply**.

Sharp-shinned hawk

An assessment occurred in 2012 (USDA FS 2012e) and described habitat utilized by this species as described below.

Sharp-shinned hawk nest sites are characterized as dense, conifer stands, with dense over stories and sparse understories. Most nests were in young (25-50 years) even-aged conifer stands with single-layered canopies. The growth form of trees may be the most reliable parameter by which to characterize nest sites of sharp-shinned hawks. The vegetation at nest sites is usually in the early successional stages

and extremely dense. Nest stands are dominated by trees 7.5-37.5 cm dbh and average 2,286 trees/ha. Tree species composition varies from pure stands of ponderosa pine at lower elevations, to mixed stands of ponderosa pine and white fir at mid-elevations, to mixed and pure stands of white fir and lodgepole pine at high elevations. Stands of all age classes in each timber type are represented, however the most common type is mature ponderosa pine overstory with mixed understory of ponderosa pine and white fir.

Direct habitat loss can occur from urban development and timber harvest. Habitat loss can also occur indirectly as young forest stands mature and no longer provide suitable stand conditions for nesting. It should be noted though that impacts of timber harvest to sharp-shinned hawks would be unique from site to site depending on the structure of the forest at the time of harvest, the form and intensity of harvest, and the temporal perspective.

Forest-wide sharp-shinned hawk nesting habitat was modeled using white fir, grand fir, Douglas-fir lodgepole pine and ponderosa pine PAG. This included dense canopy with trees at a minimum 5-inch dbh, structure classes 3-5 with a 20-inch dbh maximum. The resulting layer was updated by removing stand replacement fire and recent management activities within the last 5 years. The acres of suitable habitat were calculated at the subwatershed level.

There are an estimated 426,138 acres of potential sharp-shinned hawk nesting habitat on the DNF, with 34,922 acres within the North Unit Diversion Dam – Deschutes River Watershed and 4,854 acres within the Lava Island Falls – Deschutes River Subwatershed.

The model did not include habitat within or adjacent to the cinder pit as suitable habitat, but from field reconnaissance, there is an estimated 4 acres of potential suitable habitat within the project area and suitable habitat adjacent to the project area. Currently, there are no documented sharp-shinned hawk nests within or adjacent to the project area. The habitat is considered low quality because of the disturbance that occurs from cinder pit activities. If a sharp-shinned hawk nest is discovered then timing limitations found in **WL-RPM #2 would apply**.

Direct and Indirect Impacts from Alternative 1

There will be no direct or indirect impacts to Cooper's or sharp-shinned hawks from this alternative. Current habitat would remain and continue to be available.

Direct and Indirect Impacts from Alternative 2

This project would remove approximately 4 acres of potential habitat for both of these accipiter species. The habitat would be considered low quality because of the activities that occur here when the cinder pit is active, which is generally the spring and summer months. There are no known Cooper's hawk or sharp-shinned hawk nests or observations in the project area, but if a nest is discovered prior to or during project activities, then WL-RPM #2 will prohibit disturbing activities within ¼ mile of the nest from April 15 – August 31. If restrictions were not placed for an active nest it could lead to nest abandonment and loss of individuals.

The loss of habitat would not noticeably change the availability of nesting or foraging habitat at the Forest, watershed or subwatershed level (see Table 3.8).

Table 3.8: Current Cooper's and sharp-shinned hawk nesting habitat and loss associated with the project expansion.

Area	Acres of Nesting	Acres of Habitat	Percentage of Habitat Loss

	Habitat	Removed with Project	
Forest	275,340 (CH) 426,138 (SSH)	4	0.00001% (CH and SSH)
North Unit Diversion Dam Watershed	27,310 (CH) 34,922 (SSH)	4	0.0001% (CH and SSH)
Lava Island Falls-Deschutes River Subwatershed	3,873 (CH) 4,854 (SSH)	4	0.001% (CH and SSH)

Cumulative Impacts

The primary action for cumulative impacts consideration to Cooper's and sharp-shinned hawk habitat is the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Between these two projects, they will treat approximately 53% of the available Cooper's hawk habitat within the watershed and 44% of the sharp-shinned hawk habitat within the watershed.

Implementation of the Red Butte Pit Expansion Project would impact an additional 0.0001% of habitat within the watershed. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. The vegetation management projects would have negative short-term impacts due to a reduction on stand densities and canopy cover and long-term positive benefits by reducing the risk of habitat loss due to insects and disease or high intensity and/or stand replacing fire. Therefore, negative cumulative impacts from the Red Butte Pit Expansion Project are not expected.

Effects Determination and Rationale

This project is expected to permanently remove 4 acres of potential habitat for these species, but there are no known nests or sightings of Cooper's or sharp-shinned hawks within the project area. If either species is found before or during project activities, , then WL-RPM #2 would prohibit disturbing activities within ¼ mile of the nest from April 15 – August 31. With this, implementation of this project should ***have no impact to individuals and would not contribute to a trend toward federal listing or loss of viability to the population or species.***

Woodpeckers

Woodpeckers were identified as a group of species for MIS. Based on the available habitat and species biology the hairy woodpecker, Lewis' woodpecker, northern flicker, white-headed woodpecker, and Williamson's sapsucker have potential habitat within the project area. The Lewis' and white-headed woodpeckers were discussed in the BE and therefore will not be discussed here. A habitat assessment was completed in 2012 for each of these woodpecker species (USDA FS 2012a, b, f, g, and h).

Hairy woodpecker

Hairy woodpeckers are found in mixed conifer and ponderosa pine forests and use deciduous stands during the breeding season. They have been observed nesting in relatively open stands with low basal area, low stem densities, and open canopies (39% canopy cover). Ponderosa pine is a preferred nest tree but they are known to nest in other species (lodgepole pine, western larch, Douglas-fir, and aspen) except grand fir. Most nests are in dead trees less than 5 years and preferred snags are 10-20" dbh.

Hairy woodpeckers use both live and dead trees for foraging which is primarily scaling (75%) but also excavated, pecked, and gleaned. They are abundant in recently post-fire burned areas. This species

also had greater relative abundance in high severity areas than in moderate severity areas. The increase in hairy woodpecker relative abundance following fire may be due to an increase in bark and wood borer larvae. Abundance decreases with increasing burn age tapering off by years 4-7 as prey availability decreases.

Hairy woodpecker nesting habitat was mapped using mixed conifer, ponderosa pine, and lodgepole pine PAG in early, mid and late seral stages. In addition, stand size had to range from 11-20"dbh in mixed conifer and ponderosa pine and range from 5-20"dbh in lodgepole pine and have open stand characteristics to be mapped as potential habitat. Recent stand replacement fires less than 5 years old were added as habitat. Recent forest management activities that resulted in conditions other than described above were removed from mapped potential habitat.

There are an estimated 507,920 acres of hairy woodpecker nesting habitat on the DNF, with 30,153 acres within the North Unit Diversion Dam – Deschutes River Watershed. There are an estimated 10 acres of nesting and foraging habitat within the project area.

Northern flicker

The northern flicker nests in large diameter snags and live trees with moderate to heavy decay. The flicker frequently nests in ponderosa pine forest types, but will also nest in older juniper stands. Most studies have found flickers prefer to nest in open habitats characterized by low basal area, low canopy cover, large snags, and high herbaceous cover. Ponderosa pine stands provide nest sites adjacent to grasslands where flickers forage.

The northern flicker forages almost exclusively on the ground during the summer specializing on ants and beetle larvae. Foraging locations are characterized by short vegetation and bare ground with tall vegetation being uncommon. Foraging methods shift to excavating dead and down woody material in the fall. Flickers also excavated, pecked, gleaned, and harvested seeds in live and dead trees, down woody material, and stumps.

Northern flicker nesting habitat was mapped using plant association groups from juniper, lodgepole pine, ponderosa pine, grand/white fir, and Douglas-fir in all seral stages. In addition, stand size had to be a minimum diameter of 10"dbh or greater in lodgepole pine and 15" dbh in all other PAGs and have open stand characteristics (based on the canopy cover level thresholds for each PAG) to be mapped as potential habitat.

There are approximately 219,576 acres of potential northern flicker nesting habitat on the Forest, with 16,028 acres within the North Unit Diversion Dam – Deschutes River Watershed. There are an estimated 10 acres of nesting and foraging habitat within the project area.

Williamson's sapsucker

The Williamson's sapsucker is included with the woodpecker group which was chosen as an MIS for the DNF. This group was chosen to represent all wildlife species which use cavities for nesting and denning. The woodpeckers, as well as many of the secondary cavity nesters, consume forest insects thereby contributing a valuable suppression influence on destructive forest pests.

Williamson's sapsuckers occur in older forest interior ponderosa pine, aspen, cottonwood-willow. Forest stands that are single and multi-strata grand/white fir and interior Douglas-fir also provide habitat. In central Oregon, sapsucker densities were much greater in lightly harvested areas compared to intensively harvested stands; while nests were located in managed stands, they were generally found in denser patches of forest containing high snag densities.

Although this species is highly adaptable and able to withstand considerable disturbance (Marshall et al. 2003), it is likely that the decay condition (i.e. heartwood decay), structural characteristics (such as tree diameter and height), and abundance of suitable nest trees are limiting factors influencing distribution and abundance in some areas of their range (Cooper and Manning 2004). Primary threats include forest management practices or activities that remove large snags and the impacts of fire suppression (Dobbs et al. 1997, Wisdom et al. 2000, Marshall et al. 2003, and Cooper and Manning 2004).

There are 243,364 acres of potential Williamson's sapsucker habitat on the Forest. 5,645 acres occur within the North Unit Diversion Dam – Deschutes River Watershed. There are an estimated 10 acres of nesting and foraging habitat within the project area.

Since the woodpecker species listed above have similar habitat needs, the impacts from the cinder pit expansion are grouped.

Most woodpeckers are tolerant of human presence near nests so ongoing use of the Red Butte Pit is not expected to displace nesting individuals.

Direct and Indirect Effects from Alternative 1

There would be no direct or indirect impacts to MIS woodpecker species under this alternative. Existing habitat conditions would remain as presently available for all woodpecker species.

Direct and Indirect Effects from Alternative 2

There is no known hairy woodpecker, northern flicker, or Williamson's sapsucker nests or observations in the project area. This project would remove approximately 10 acres of potential habitat for these species. There are no snags that would be removed, but there are trees that could provide nesting habitat. If there happened to be one of these woodpecker species nesting within or immediately adjacent to the project area during tree removal, it could lead to nest abandonment and loss of individuals.

The loss of habitat would not noticeably change the availability of nesting or foraging habitat at the Forest or watershed level (see Table 3.9).

Table 3.9: Current MIS woodpecker nesting habitat and loss associated with the project expansion.

Area	Acres of Nesting Habitat	Acres of Habitat Removed with Project	Percentage of Habitat Loss
Forest	507,920 (HAWP) 219,576 (NOFL) 243,364 (WISA)	10	0.00002% (HAWP) 0.00005% (NOFL) 0.00004% (WISA)
North Unit Diversion Dam Watershed	30,153 (HAWP) 16,028 (NOFL) 5,645 (WISA)	10	0.0003% (HAWP) 0.0006% (NOFL) 0.002% (WISA)

HAWP=Hairy Woodpecker, NOFL=northern flicker, WISA=Williamson's sapsucker

Cumulative Impacts

The primary actions for cumulative impacts consideration to hairy woodpeckers, northern flickers and Williamson's sapsuckers are the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Vegetation treatments between the West Bend and Rocket projects would treat approximately 56% of the available potential MIS woodpecker species habitat within the North Unit Diversion Dam Watershed, with the intent of reducing smaller diameter material and thus stand density to help promote older ponderosa pine stands that provide future woodpecker habitat. These treatments focus on managing for ponderosa pine development and sustainability and will result in long-term benefit for woodpeckers.

Implementation of the Red Butte Pit Expansion Project would impact an additional 0.002 to 0.0006% of habitat within the watershed. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. The treatments under both vegetation projects are not expected to negatively impact current reproductive habitat and would maintain a variety of shrub conditions throughout the project area.

Therefore, negative cumulative impacts from the Red Butte Pit Expansion Project are not expected.

Effects Determination and Rationale

There are no known nests or sightings of these MIS woodpeckers within the project area. This project is expected to permanently remove 10 acres of potential nesting and foraging habitat. There are no snags within the project area to remove, so the potential habitat would be foraging habitat on live trees or in individual live trees with decay that may already have cavities within them. With the possibility of MIS woodpeckers nesting within or adjacent to the project area and with the potential to cause nest abandonment or loss of individuals during project activities, implementation of this project *may adversely impact individuals, but not likely to contribute to a loss of viability to the population or species*. These species are ranked by NatureServe as apparently secure (S4) or secure (S5).

Big Game

Elk

Rocky Mountain elk were chosen as a terrestrial MIS in the DNF LRMP for its socioeconomic importance to the hunting community in Central Oregon. Elk management objectives were developed with the Oregon Department of Fish and Wildlife. Objectives for both summer and winter populations are identified with annual monitoring conducted by ODFW to determine the annual hunting recommendations. Eleven key elk habitat areas totaling 59,825 acres are identified in the DNF LRMP and management in these areas will provide habitat conditions needed to support a minimum of 1,500 summer elk and 340 wintering elk. The Red Butte Pit Expansion Project occurs within the northwest corner of the Ryan Ranch Key Elk Area.

Elk are negatively affected by vegetation management activities that reduce hiding and thermal cover. Hiding cover provides elk security areas from disturbance (e.g., motorized vehicles, hikers and other recreationists) and predators. Elk avoid areas with high road density when roads remain open for use but may use roads as travel corridors if areas are closed (Rowland et al. 2000). Lyon (1979) reported the area of avoidance for elk is generally ¼ to ½ mile from a road depending on the amount of traffic, road quality, and density of cover near roads.

High road density can increase illegal harvest as access to elk populations increase. Winter range can be a critical habitat element and the availability of this habitat type can be affected by housing development, overgrazing and forage quality decrease.

The DNF LRMP recommends open road densities between 0.5 and 1.5 mi/mi^2 in key elk areas with a lower objective in areas of high public use (WL-46). Current road density in the Ryan Ranch Key Elk area is 2.02 mi/mi^2. The DNF MIS assessment for elk calculated a road density of 2.77 mi/m^2 in the Ryan Ranch Key Elk Area. The current density is less than the previously calculated density because of road closures in the Katalo East and West, Highway 97 closure and some previously identified road that was converted to a trail (S. Bigby, personal communication 2013).

The DNF LRMP defines thermal cover for elk as a minimum 10 acre patch of 40 feet or taller trees with 40% canopy cover or more. Per the DNF LRMP thermal cover should be present on 20% of Forest land in each key area. Hiding cover is described as a minimum 6 acre patch capable of concealing 90% of an adult animal at 200 feet (Thomas 1979). Per the DNF LRMP hiding cover should be present over at least 30% of each Key Elk Area (excluding "black bark" ponderosa pine) (WL-47). There are 3,437 acres of hiding cover in the Ryan Ranch Key Elk Area for 16%. There are 4,478 acres of thermal cover or 21% of the Key Elk Area. The Ryan Ranch Key Elk Area is currently below plan direction for hiding cover but slightly above plan direction for thermal cover.

The use of habitat within and adjacent to the cinder pit by elk would be dependent upon the amount of use that the pit receives throughout the year, which occurs most frequently during the spring and summer months. When the cinder pit is not in use, the gate at the intersection to the cinder pit from the Cascade Lakes Highway and the gate on the 41-930 Road are closed to discourage vehicle use, but are open to other recreational uses.

Mule Deer

Mule deer were chosen as a terrestrial MIS identified in the DNF LRMP for its socio-economic importance to the hunting community within central Oregon. The ODFW established herd management objectives based on winter population and annual herd composition conducted by ODFW was used to set these objectives for the DNF LRMP (4-9). The DNF LRMP uses Management Area Seven (MA-7) as mule deer winter range and everything else on the forest is considered summer range.

The project area occurs within biological deer winter range but is managed as Scenic Views (MA-9) within the DNF LRMP.

Road densities are to be managed at 2.5 miles/sq. mile and are currently at 2.4 miles/sq. mile within the Lava Island Falls – Deschutes River Subwatershed. Hiding cover (described as a six acre or larger stand capable of hiding 90% of a standing adult deer from view of a human at a distance of 200 feet, or with an average height of 6 feet that has not been thinned within 15 years, or residual clumps of one half acre or larger within units with advanced regeneration) within the same subwatershed is at 27% and within the DNF LRMP hiding cover must be present over at least 30% of the area.

The project area is part of the Tumalo Winter Range Cooperative Area Closure. This is a cooperative area closure between the USDA Forest Service and ODFW. Motorized vehicle routes are restricted to designated routes between December 1 and April 1.

The use of habitat within and adjacent to the cinder pit by deer would be dependent upon the amount of use that the pit receives throughout the year, which occurs most frequently during the spring and summer months. When the cinder pit is not in use, the gate at the intersection to the cinder pit from the

Cascade Lakes Highway and the gate on the 41-930 Road are closed to discourage vehicle use, but are open to other recreational uses.

Direct and Indirect Impacts from Alternative 1

There would be no direct or indirect impacts to elk or deer from this alternative. Existing habitat conditions would remain as presently available.

Direct and Indirect Impacts from Alternative 2

Elk - This project would remove an estimated 4 acres of thermal cover for elk. Hiding cover is not available and would not be an issue. The road density within the key elk area would slightly increase from the creation of a road that would be constructed to access the lower floor of the cinder pit. This access road would be approximately 0.2 miles long (see Figure 1). The loss of thermal cover and the addition of the access road would not noticeably change the availability of thermal cover or increase disturbance to elk. This area is part of the Tumalo Winter Range Closure, plus it is supposed to be gated when the cinder pit is not in active use. This would reduce the amount of private vehicle use in the area, although recreational use by bikers does occur.

Deer - Outside of the disturbance that already occurs to deer that may utilize the area surrounding the cinder pit, the impacts that would occur to mule deer from the expansion would be the disturbance that would occur during timber removal. These impacts would be short-term and would not prohibit deer from utilizing the area once this activity is completed. This area is part of the Tumalo Winter Range Closure, plus it is supposed to be gated when the cinder pit is not in active use. This would reduce the amount of private vehicle use in the area, although recreational use by bikers does occur.

WL-RPM #1 is recommended to reduce potential impacts to big-game during the winter season. Increasing awareness of big-game habitat needs during the winter season can reduce some use of the area in the winter.

Cumulative Impacts

There are no anticipated cumulative impacts associated with this project.

Effects Determination and Rationale

Implementation of this project would have minor impacts to elk and deer that may use the area. The overall direct, and indirect impacts of the project would result in a small increase in disturbance, and would be insignificant at the watershed and Forest scale. ***This project may have minor short-term impacts to elk and deer but would not contribute to a loss of viability to the population or species.***

Migratory Birds

Executive Order 13186 directs federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat (Federal Register 2001). The USDA Forest Service and the U.S. Fish and Wildlife Service have a Memorandum of Understanding (FS Agreement #08-MU-1113-2400-264) with the purpose, "to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the Parties, in coordination with the State, Tribal and local governments."

Per this agreement the USDA Forest Service has agreed to evaluate the effects of agency actions on migratory birds, focusing first on species of management concern along with their priority habitats and

key risk factors. This document addresses potential impacts to focal bird species as identified by Landbirds of the East-slope of the Cascades (Altman 2000) and Birds of Conservation Concern in BCR 9-Great Basin (US FWS 2008a).

Focal Landbird Species

The conservation strategy for landbirds of the east-slope of the Cascade Mountains in Oregon and Washington (Altman 2000) identifies priority habitat features for focal species and outlines conservation measures, goals and objectives for these habitat types. Focal habitat includes ponderosa pine, mixed-conifer, lodgepole pine, whitebark pine, meadows, aspen, and subalpine fir (Table 3.10). The Red Butte Project Area contains ponderosa habitat.

Table 3.10: Priority habitat features and associated focal species for the East-Slope Cascade Strategy.

Habitat	Habitat Feature	Central Oregon Focal Species
Ponderosa Pine	Large patches of old forest with large snags	White-headed woodpecker
	Large trees	**Pygmy nuthatch**
	Open understory with regenerating pines	**Chipping sparrow**
	Patches of burned old forest	Lewis' woodpecker
Mixed Conifer	Large trees	Brown creeper
	Large snags	Williamson's sapsucker
	Interspersion grassy openings and dense thickets	Flammulated owl
	Multi-layered/dense canopy	Hermit thrush
	Edges and openings created by wildfire	Olive-sided flycatcher
Lodgepole Pine	Old growth	Black-backed woodpecker
Whitebark Pine	Old growth	Clark's nutcracker
Meadows	Wet/dry	Sandhill Crane
Aspen	Large trees with regeneration	Red-naped sapsucker
Subalpine fir	Patchy presence	Blue Grouse

Using the above list, two habitat types within ponderosa pine habitats occur within the project area and the two migratory bird species that utilize these habitats (pygmy nuthatch and chipping sparrow) will be carried forward for more detailed analysis. While the project area does not contain large patches of old forest with old snags for white-headed woodpecker or patches of burned forest for Lewis' woodpeckers, the project area does contain habitat attributes within ponderosa pine habitat that these species can utilize and therefore were analyzed within the Biological Evaluation.

Table 3.11: Impact Conclusions for Focal Bird Species from the proposed Red Butte Pit Expansion Project.

Species	NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects

Species	NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Pygmy Nuthatch	S4 Apparently Secure	Ponderosa pine forests with large, single layered canopies with more open park-like understory. Understory with herbaceous cover, shrubs, and pine regeneration.	May impact	There are no large snags within the project area, but there are larger trees across 10 acres of habitat that could contain cavities that pygmy nuthatches could potentially nest in. If project activities occur during the nesting season, it could result in direct loss of individuals or nest abandonment. The project would add a 0.07% increase in loss of habitat across the North Unit Diversion Dam – Deschutes River Watershed.
Chipping Sparrow	S4B Apparently Secure in breeding habitat	Open ponderosa pine stands with active regeneration.	May impact	Suitable habitat occurs within 10 of the 16 acre expansion along the edges of the cinder pit and larger patches of shrub habitat on the south and east side of the project area. Removal of the larger trees and the removal of the shrub and overburden (which will occur over many years) could result in direct loss of individuals or nest abandonment if project activities occur during the nesting season. The project would add a 0.07% increase in loss of habitat across the North Unit Diversion Dam – Deschutes River Watershed.

Pygmy Nuthatch

Pygmy nuthatches are cavity nesters and although they can utilize smaller and well-decayed ponderosa pine snags, pygmy nuthatches do compete with other cavity nesters such as the white-breasted nuthatch and white-headed woodpecker for ponderosa pine snags. The desired condition for this species in ponderosa pine forests is a large tree, single layered canopy with an open, park-like understory dominated by herbaceous cover with scattered shrub cover and pine regeneration (Altman 2000).

Conservation Strategies

- Manage for large diameter trees through wider tree spacing and longer rotation periods.
- Eliminate or restrict fuelwood cutting in suitable or potential habitat.
- Retain all snags >10 in dbh and all Ponderosa pine trees >17 in dbh.

Pygmy nuthatches would use similar habitat as white-headed woodpeckers. Currently, 10 of the 16 acres proposed in the expansion are identified as potential pygmy nuthatch habitat. The area is a blackbark ponderosa pine stands dominated by trees <21" in diameter (there are scattered trees >21" dbh) with no large snags and plenty of shrub cover. No pygmy nuthatches were seen during field reconnaissance.

There are live large trees within the project area that may have decay in them for cavities, but large snags do not occur within the project area and it is this aspect of their habitat needs that may be adversely impacted rather than the general habitat type of ponderosa pine.

Chipping Sparrow

Chipping sparrows are a focal species of open ponderosa pine stands with active regeneration (Altman 2000). They nest relatively close to the ground in young pine trees (e.g. 4-8 ft. tall). Their habitat is limited by the more even-aged, tall, and high density stand structure of the project area.

Conservation strategies

- Evaluate historical plant communities and current landscape conditions when assessing where restoration activities should occur.
- Conduct understory removal and burning outside of the nesting season (April 15-July 15).
- Conduct thinning and/or overstory removal to provide suitable open conditions.

Similar to the pygmy nuthatch, 10 of the 16 acres proposed in the expansion are identified as potential chipping sparrow habitat. This habitat occurs along the edges of the current tree line adjacent to the cinder pit, plus there are larger areas of shrub habitat on the south and east sides of the cinder pit. No chipping sparrows were seen during field reconnaissance.

<u>Direct and Indirect Impacts - Alternative 1</u>

The selection of this alternative would result in no impact to the pygmy nuthatch or chipping sparrow because no tree removal would occur to reduce potential available nesting and foraging habitat.

<u>Direct and Indirect Impacts - Alternative 2</u>

There are no known pygmy nuthatch or chipping sparrow nests or observations in the project area. This project would remove approximately 10 acres of potential nesting habitat for both species.

For the pygmy nuthatch, there are no snags that would be removed, but there are trees that could provide nesting habitat. If there happened to be pygmy nuthatches nesting within or immediately adjacent to the project area during tree removal, it could lead to nest abandonment and loss of individuals.

For the chipping sparrow, the removal of the larger trees would not remove their nesting habitat, but the disturbance during this activity could destroy or lead to nest abandonment if it occurs during the nesting season. The removal of the smaller trees within the brushy area would only be removed as the pit is expanded, so the removal of this habitat would occur over many years. As with the large tree

removal, if the shrub removal occurs within the nesting season, it could lead to nest abandonment and loss of individuals.

The loss of habitat would not noticeably change the availability of nesting or foraging habitat at the Forest, watershed or subwatershed level. Since pygmy nuthatches and chipping sparrows utilize habitat similar to the white-headed woodpecker, the same habitat acres available to this species was used to analyze for habitat loss (see Table 3.12).

Table 3.12: Current pygmy nuthatch and chipping sparrow nesting habitat and loss associated with the project expansion.

Area	Acres of Nesting Habitat	Acres of Habitat Removed with Project	Percentage of Habitat Loss
Forest	198,330	10	0.005%
North Unit Diversion Dam Watershed	14,935	10	0.07%
Lava Island Falls – Deschutes River Subwatershed	2,261	10	0.4%

Cumulative Impacts

The primary actions for cumulative impacts consideration to pygmy nuthatch habitat are the West Bend Vegetation Management Project and the Rocket Vegetation Management Project. Vegetation treatments between the West Bend and Rocket projects would treat approximately 60% of the available potential pygmy nuthatch and chipping sparrow habitat within the North Unit Diversion Dam Watershed, with the intent of reducing smaller diameter material and thus stand density to help promote older ponderosa pine stands that provide future pygmy nuthatch habitat and open up dense stands to promote growth of new trees and shrub habitat for chipping sparrows. These treatments focus on managing for ponderosa pine development and sustainability and will result in long-term benefit for both bird species.

Implementation of the Red Butte Pit Expansion Project would impact an additional 0.07% of habitat within the watershed. Cumulatively, when added to the large vegetation projects, the percentage of habitat impacted is minor. The treatments under both vegetation projects are not expected to negatively impact current reproductive habitat and would maintain a variety of shrub conditions throughout the project area. Therefore, negative cumulative impacts from the Red Butte Pit Expansion Project are expected to be minimal.

Effects Determination and Rationale

There are no known nests or sightings of pygmy nuthatches or chipping sparrows within the project area. This project is expected to permanently remove 10 acres of potential nesting habitat, which does not follow Altman's list of conservation strategies, but in the case of a cinder pit expansion, they would

not apply. There are no large snags to remove and shrub habitat would be removed in stages. With the possibility of pygmy nuthatches and/or chipping sparrows nesting within or adjacent to the project area and with the potential to cause nest abandonment or loss of individuals during project activities, implementation of this project may adversely impact individuals, but with both species considered apparently secure (S4) within the state of Oregon by NatureServe and the amount of habitat available on the Forest, would not cause a downward trend in the population or species.

Birds of Conservation Concern

The Birds of Conservation Concern 2008 (US FWS 2008a) identifies species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. The goal is to conserve avian diversity in North America and includes preventing or removing the need for additional ESA bird listings by implementing proactive management and conservations actions (US FWS 2008a). Conservation concerns stem from population declines, naturally or human-caused small ranges or population sizes, threats to habitat, or other factors. This project is in Bird Conservation Region 9 – Great Basin (Table 3.13: Birds of Conservation Concern for BCR 9 – Great Basin.Table 3.13**Error! Reference source not found.**).

Table 3.13: Birds of Conservation Concern for BCR 9 – Great Basin.

Species	Preferred Habitat
Yellow-billed loon	Winters along the Pacific Coast with transients found on inland bodies of water.
Greater sage-grouse (Columbia Basin DPS)	Sagebrush obligate, found east of Cascade crest. Requires large expanses of sagebrush with healthy native grasses and forbs.
Eared grebe	Shallow alkaline lakes and ponds where open water is intermixed with emergent vegetation.
Black Swift	Nests on ledges or shallow caves in steep roc faces and canyons. Usually near or behind waterfalls and sea caves. Forages over forests and open areas in montane habitats.
Calliope Hummingbird	Predominately montane open shrub sapling seral stages (8-15 years) at higher elevations and riparian areas.
Lewis' woodpecker	**Ponderosa pine, cottonwood riparian area, or oak savannahs with open canopy, brushy understory and dead/down material. Also larger post-burn environments.**
Williamson's sapsucker	East Cascades in middle to higher elevations of mature mixed conifer or deciduous forests. Snag dependent species.
White-headed woodpecker	**Old-growth Ponderosa pine and open habitats where standing snags and scatter tall trees remain.**
Willow Flycatcher	Riparian shrub dominated habitat, especially brushy/willow thickets.
Loggerhead Shrike	Grassland pasture with fences or sagebrush with scatter juniper woodlands. Requires perches for hunting and nesting.
Pinyon Jay	Pinyon-juniper woodland, sagebrush, and scrub oak habitats.
Sage Thrasher	Large patches of sagebrush/bitterbrush with shrub height usually 30-60cm high.
Virginia's Warbler	High elevation steep-sloped, xeric, pinyon-juniper or oak woodlands.
Green-tailed Towhee	**Shrub-stands with high diversity interspersed with trees.**
Brewer's Sparrow	Contiguous stands of big sagebrush, greasewood, and rabbitbrush.
Black-chinned	Infrequently in ceanothus and oak hillsides of SW Oregon.

Species	Preferred Habitat
Sparrow	
Sage Sparrow	Southeast and central Oregon in semi-open evenly spaced shrubs up to 6,800 feet.
Tricolored Blackbird	Hardstem bulrush, cattail, willows wetlands.
Black-rosy Finch	Bare rock outcrops, cliffs, and hanging snowfields above timberline.
Bald Eagle	Large water bodies and nearby forested areas.
Ferruginous Hawk	Sagebrush plains and bunchgrass prairie of the high desert and Blue Mountains.
Golden Eagle	Shrub-steppe, grassland, juniper, and open Ponderosa pine with open areas for hunting.
Peregrine Falcon	Wide range of habitat including cliffs, bridges, rock quarries.
Yellow Rail	Shallow flooded sedge meadows at 4,100-5,000 feet with vegetative cover near 50%.
Snowy Plover	Eastern Oregon summer resident breeding on alkali flats and salt ponds.
Long-billed Curlew	Open grassland east of Cascades.
Marbled Godwit	Migrant along the Pacific Coast preferring mudflats, sandy beaches, wet margins on large reservoirs.
Yellow-billed Cuckoo	No known breeding populations in Oregon. Large riparian forests, especially black cottonwood, Oregon ash and willow.
Flammulated Owl	Ponderosa pine forest and mixed conifer stands with a mean 67% canopy closure, open understory with dense patches of saplings or shrubs.

Using the above list, three bird species have potential habitat within the project area. The Lewis' and white-headed woodpeckers were analyzed within the BE under the *USDA Forest Service Pacific Northwest Sensitive Wildlife Species* section and the *Management Indicator Species section*. The green-tailed towhee will be carried forward for more detailed analysis.

Table 3.14: Impact Conclusions for Birds of Conservation Concern from the proposed Red Butte Pit Expansion Project.

Species	Federal Status/NatureServe Ranking	Habitat Needs	Direct/Indirect Effects	Effects Rationale and Cumulative Effects
Green-Tailed Towhee	S4B Apparently secure in breeding habitat	Shrub stands interspersed with trees.	May impact	This project would eventually remove an estimated 6 acres of habitat over the course of 20 years. There is also the possibility of green-tailed towhees nesting within or adjacent to the project area and with the potential to cause nest abandonment or loss of individuals during project activities. No cumulative effects are expected.

Green-tailed towhee

This bird prefers vigorous shrub stands with high shrub species diversity (Marshall et al. 2006). As a ground forager, it spends most of its time on the ground or thick cover. Most nests occur on a shrub branch low to the ground, but they will also nest on the ground under a shrub.

Direct and Indirect Impacts - Alternative 1

The selection of this alternative would result in no impact to green-tailed towhee because no tree or shrub removal would occur to reduce potential available nesting and foraging habitat.

Direct and Indirect Impacts - Alternative 2

There are no known green-tailed towhee nests or observations in the project area. This project would eventually remove an estimated 6 acres of potential green-tailed towhee habitat. Some of the shrub habitat may be impacted during tree removal, but the removal of the shrubs would mainly occur as the pit expansion occurs and just before overburden removal. So, it would be an eventual loss of current habitat, but it would occur over many years. Where tree removal occurs, shrubs would also be allowed to grow into this area, creating additional habitat. If shrub removal occurs within the nesting season, it could lead to nest abandonment and loss of individuals.

The number of acres of green-tailed towhee habitat has not been calculated for the Forest. The loss of habitat that would occur over a 20-year period from this project would not noticeably change the availability of nesting or foraging habitat at the Forest level.

Cumulative Impacts

This project is not expected to cause additive cumulative impacts as the other projects within the watershed (i.e. West Bend and Rocket) would not be impacting green-tailed towhee habitat.

Effects Determination and Rationale

There are no known nests or sightings of green-tailed towhees within the project area. This project would eventually remove an estimated 6 acres of habitat over the course of 20 years. Shrub habitat would also grow into the areas where tree removal occurs that could provide additional habitat over the years, but would also eventually be removed. With the possibility of green-tailed towhees nesting within or adjacent to the project area and with the potential to cause nest abandonment or loss of individuals during project activities, implementation of this project *may adversely impact individuals, but with the species considered apparently secure (S4) in breeding habitats within the state of Oregon by NatureServe, this project would not cause a downward trend in the population or species.*

High Priority Shorebirds

The U.S. Shorebird Conservation Plan identified U.S. and Canadian shorebird populations that are considered highly imperiled or of high concern (US FWS 2004). The 2004 list (Table 3.15) updated the initial list from 2001 and created a list of seven highly imperiled and 23 high priority shorebird populations. The list is grouped into global species and North American populations. Global species are those with their entire range restricted to the U.S. and Canada and North American populations are a concern in North America but the species does occur in other areas. Most of these species do not regularly occur on the Deschutes National Forest and when they do habitat is typically restricted to larger water bodies.

Table 3.15: High Priority Shorebird Species/Populations

Highly Imperiled	***Global Species***
	Piping Plover
	Mountain Plover
	Long-billed Curlew
	Buff-breasted Sandpiper
	North American Populations
	Snowy Plover
	Black-necked Stilt (Hawaiian population)
	Red Knot (Canadian Arctic-Atlantic Coast Population)
High Concern	**Global Species**
	American Golden-Plover
	Black Oystercatcher
	Solitary Sandpiper
	Upland Sandpiper
	Bristle-thighed Curlew
	Hudsonian Godwit
	Marbled Godwit
	Black Turnstone
	Surfbird
	Western Sandpiper
	Rock Sandpiper
	Short-billed Dowitcher
	American Woodcock
	Wilson's Phalarope
	North American Populations
	Wilson's Plover
	American Oystercatcher
	Whimbrel
	Bar-tailed Godwit
	Ruddy Turnstone
	Red Knot (Populations other than Canadian Arctic-Atlantic Coast Population)
	Sanderling
	Dunlin (Alaska-East Asian and Alaska-Pacific Coast Populations)

Based on the ecology and natural history of the species listed above there isn't any habitat available in the project area. There are no large meadows or water bodies. There is no habitat for shorebirds within 1 mile of the project area.

Direct and Indirect Impacts—Action Alternative

The project area does not provide habitat for any of the shorebird species listed in Table 3.15. Implementation of the project would not directly or indirectly affect any high priority shorebird species.

Cumulative Impacts

In the absence of direct or indirect impacts no cumulative impacts to high priority shorebirds are anticipated.

Forest Plan Compliance

With the described Wildlife Resource Protection Measures 1 and 2, this project is in compliance with direction (standards and guidelines) in the Deschutes National Forest Land and Resource Management Plan (USDA FS 1990).

Conclusion

This concludes the Terrestrial Wildlife Specialist Report for the Red Butte Pit Expansion Project. All determinations were made on the project being implemented as described. Changes to the project design may require revaluation of potential impacts.

3.3.2 BOTANY

This section covers the existing conditions and effects of implementation on botanical resources. This section incorporates by reference the Botany Biological Evaluation contained in the project record located at the Bend-Fort Rock Ranger District. Specific information on methodologies, assumptions, plant species, and other details are contained in the report. A summary of the existing condition and predicted effects of the alternatives are discussed in this section.

Introduction

The biological evaluation, to document consideration of Threatened, Endangered, and Sensitive (TES) plants related to this project, is prepared in compliance with the Forest Service Manual (FSM) 2672.4 and the Endangered Species Act of 1973 (Subpart B; 402.12, section 7 consultation). Effects of this activity are evaluated for those TES plant species on the current Regional Forester's Sensitive Species List (FSM 2670.44, December, 2011) that are documented or suspected to occur on the Deschutes National Forest.

Existing Condition

There are no known TES plant sites within the project area or in the vicinity. Field reconnaissance was conducted by an ODOT Biologist on 7/11/2013. No TES plants were located.

Direct, Indirect and Cumulative Effects

<u>Alternative 1 – No Action</u>

There would be no direct or indirect effects to botanical resources since proposed activities would not occur and there are no proposed, threatened, endangered or sensitive plant species or habitat within the project area. Since no direct or indirect effects would occur, there is no overlap in time and space with activities and effects therefore there would be no cumulative effects.

<u>Alternative 2 – Proposed Action</u>

No known proposed or TES plant species or habitat exist within the project area; therefore, there would be no direct indirect or cumulative effects from the proposed action.

3.3.3 INVASIVE PLANTS

This section covers the existing conditions and effects of implementation on invasive plants. This section incorporates by reference the Invasive Plant Risk Assessment Report contained in the project

record located at the Bend-Fort Rock Ranger District. Specific information on methodologies, assumptions, consistency with Forest Plan, and other details are contained in the report. A summary of the existing condition and predicted effects of the alternatives are discussed in this section.

Introduction

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, Forest Service policy requires that decision documents must identify noxious weed control measures that will be undertaken during project implementation (FSM 2081.03).

Existing Condition

During the field season several site visits were conducted. Mullein has been found in the pit and approximately 50 plants were pulled in September 2012. Mullein is not officially on the State's noxious weed list but is problematic, at times, on the Forest and is treated under certain circumstances.

Risk Ranking

Factors considered in determining the level of risk for the introduction or spread of noxious weeds are:

__X__ **HIGH**

Has to be a combination of the following three factors:

1. Known weeds in/adjacent to project area.
2. Any of vectors* #1-8 in project area.
3. Project operation in/adjacent to weed population.

_____ MODERATE

Any of vectors #1-5 present in project area.

_____ LOW

1. Any of vectors #6-8 present in project area; or
2. Known weeds in/adjacent to project area without vector presence.

***Vectors** (if contained in project proposal) ranked in order of weed introduction risk:

1. Heavy equipment (implied ground disturbance)
2. Importing soil/cinders
3. OHV's
4. Grazing (long-term disturbance)
5. Pack animals (short-term disturbance)
6. Plant restoration
7. Recreationists (hikers, mountain bikers)
8. Forest Service project vehicles

A risk ranking of high is appropriate because heavy equipment would be working at the site, and in addition to the mullein at the site, weed species such as spotted knapweed are known from the general vicinity. The machinery could introduce or spread weed seeds.

Direct, Indirect and Cumulative Effects

Alternative 1 – No Action

There would be no direct or indirect effects to noxious weeds since proposed activities would not occur. The weed site in the pit would continue to persist and Forest weed technicians would continue hand-pulling it. However, with the advent of the new Deschutes-Ochoco Invasives EIS (USDA FS 2012), there is the potential for treating it with herbicide, which would help control it faster and more efficiently than pulling by hand.

Alternative 2 – Proposed Action

As with any ground-disturbing event, and especially where heavy machinery is involved, there is always the possibility that weeds could be spread from the known weed site, or new ones introduced. Because the known weed site has experienced disturbance for years, this project combined with continued use can be expected that any remaining seeds would be encouraged to germinate and grow.

Resource protection measures (Ch. 2.6) such as washing machinery prior to conducting work, using weed-free fill material, and treating weed sites or avoiding significant sites prior to and during implementation would reduce the chance of weeds spreading and/or being introduced.

3.3.4 SCENERY

Introduction

This section covers the existing conditions and effects of implementation on scenery resources. This section incorporates by reference the Scenery Resource Report contained in the project record located at the Bend-Fort Rock Ranger District. A summary of the existing condition and predicted effects of the alternatives are discussed in this section.

Existing Conditions

The Red Butte Cinder Quarry lies approximately 1500' southeast of Cascade Lakes National Scenic Byway near milepoint 8.9, within an area of mature ponderosa pine forest, and rises approximately 300' above surrounding ground. The pit is an existing open quarry facility which has been used for many years by both the Deschutes National Forest and the Oregon Department of Transportation.

It lies within a Scenic Views – Middleground Management Area classified as having a Moderate Integrity Level – SMS (Partial Retention – VMS). This means any changes to the existing condition would be allowed if the landscape appears slightly altered and as long as management activities remain visually subordinate to the character of the landscape.

The existing scenic quality of this area is relatively high and intact: set against a backdrop of the Deschutes National Forest / ponderosa pine forests of Central Oregon, bounded by numerous Cascade Mountain peaks on the west, and, on the east, giving way to large, unbroken expanses of open lava fields of the Newberry National Volcanic Monument, with the juniper / sage-dominated Columbia Plateau farther to the east.

From the Lava Butte viewpoint, two open quarry areas are present in this landscape, including the Red Butte Cinder Quarry (to the northwest) and an unidentified quarry to the southwest. These quarries, along with roads, utility corridors and urban development of Bend (to the north), comprise the visual evidence of human influence in this landscape.

Key Views

Views to the pit are few and generally distant or brief. The project has the potential to alter views from two specific locations: the location of primary concern is at the top of Lava Butte at Lava Lands Visitor Center, and increasing numbers of recreational viewers along US Forest Service Road 41. The potential to impact views at the viewpoint known as the North Portal Scenic Byway Viewpoint (about milepoint 8.9 on the Cascade Lakes National Scenic Byway) were considered as well, but determined to be not significant due to the specific aspect of views there being of the west side of the Red Butte, rather than the proposed expansion area.

Lava Butte is frequented by many visitors each year (as many as 70,000 visitors came to the Lava Lands Visitor Center in 2009, with many taking the drive to the top of the Butte). The view of the pit from Lava Butte is relatively distant (approx. 5.8 miles), and expansion of the southwest area of the pit would be visible.

The view from US Forest Service Road 41 is closer still, with the view of the upper (higher elevation) south-facing portions of the expansion visible while driving northbound from approximately 1.0 mile and continuing to as close as approximately 0.6 mile from the source. Use of this road is increasing with the new multi-use path between Benham Falls, Lava Lands, and Sunriver.

The North Portal Scenic Byway Viewpoint is closer (approximately 0.6 miles). It is important to note that the view from the North Portal Scenic Byway Viewpoint is the separate westerly cinder pit, a smaller disturbed area that will remain unchanged by this current proposal. The pit expansion would be effectively screened from the viewpoint by the existing trees that would remain along, and outside of, the expansion perimeter and by the butte-shape topography of the terrain where the expansion area is located.

Viewer Descriptions

Viewers to Lava Butte are interested in learning about the unique landscape, geology and landscape formation processes which have occurred here. Volcanic activity, lava fields, cinder cones, basalt flows, even obsidian formations are all present and of interest. Additionally, observing and learning about the ponderosa pine forests of Central Oregon, forest management strategies and how people have interacted with this landscape over time are also items of interest. The general visitor is likely valuing the "naturalness" of this setting, and the opportunities to consider scales of geologic time and earth-forming processes are a unique aspect of this landscape. The color of the pit is particularly noticeable against the greens and darker colors of this forested landscape.

From Lava Butte, the pit is visible from several locations: at the upper parking area, the pit is visible through the ponderosa pine that vegetate portions of the Butte. The pit is also visible from the interpretive structure at the top of the Butte. Views to the pit from this location are approximately 5.8 miles distant.

Viewers at the top of Lava Butte have left their vehicles, made the climb up steep stairs to the interpretive structure and have a 360 degree view of the Newberry National Volcanic Monument and surrounding environs, aided by the interpretive mural within the structure. Views from this location are many, frequent and long in duration.

Travelers along Cascade Lakes National Scenic Byway have few, incidental, fleeting views of the unaffected west pit only and at distances between approximately 0.45 and 0.33 miles while driving east near milepoint 9. Travelers along US Highway 97 (The Dalles – California Highway) cannot see the pit.

Travelers along US Forest Service Road 41 are significantly higher than either of the other 2 viewpoint sites, and differ somewhat in character. Road 41 provides access to mountain bike trails, hiking, and numerous recreation areas along the Deschutes River. Views of the Red Butte Cinder Pit would be primarily limited to US Forest Service Road 41, given the density of pines and low topographic position of many of these recreation sites. The new bike trail access to Sunriver from Bend will increase users to the already popular mountain bike trails throughout the area.

There are very few (if any) residences in the area, so persistent, frequent, extended views to the pit from any angle are not a factor in this analysis.

Impacts to Scenic Quality

The proposed project will expand the east cinder pit portion in all directions; the separate west cinder pit will be unchanged. Existing roads to and from the pit will be utilized, and one new Pit Floor Access road will be developed along the east edge.

The expansion will move west and upslope to the top of the butte, and outward in all other directions. This will increase the visibility of the pit from the east and south.

Views from the north and from the west will remain relatively unchanged, as the unaffected portions of the hill and existing forest will screen views from those directions. Additionally, no expansion is proposed for the west cinder pit, which is the small excavation area viewed after hiking from the North Portal Scenic Byway Viewpoint, so no impact to scenic quality is anticipated here. Existing trees along the perimeter of the proposed expansion will effectively screen visual impacts from this viewpoint.

The increased visibility from the east and south will affect the viewers from Lava Butte and US Forest Service Road 41. The upper west portion of the expansion area will be most noticeable from these locations. A relatively minor change will be detectable in the upper east part of the expansion from the Lava Butte viewpoint while the changes in this portion will be a loss of trees along the skyline and change in the height of the skyline from the Road 41 viewpoint. The change in the lower portions of the expansion area, below the haul roads, will be effectively screened by the existing foreground forest at the Road 41 viewpoint, but will be only partially screened from the Lava Butte viewpoint. Based upon the photo-simulation from the southeast, it appears that the area of the pit visible from Lava Butte will increase by about 25%. Viewers looking for "naturalness" in this area will be minimally adversely impacted, as the pit still represents a small contrasting area in the larger landscape; viewers who appreciate the geology and human interaction with this landscape will be less adversely affected. Viewers along US Forest Service Road 41 will experience short, partial views of the changes at the pit #1, primarily limited to the upper elevations of the expansion. The increase in disturbed area from this viewpoint is estimated at 30% to 35%.

Initial actions leading to use of the expanded pit will be removal of timber in the expansion area. This timber removal is anticipated to occur with the 3 years following project authorization. Existing shrubs and grasses will be left as a ground cover until use of the underlying cinder material is needed.

Timelines associated with further change following timber removal are less certain. It is anticipated that the existing steeper excavated slopes in the pit will be reduced or flattened in initial operations to increase safety for any recreational uses that occur at the site. These slope-flattening uses may occur over the 10 to 15 years. This use scenario would concentrate impacts to much of the upper elevations of the expansion area, therefore visible from the USFS Road #41 and Lava Butte viewpoint locations.

Expanded use would move to the areas below the existing haul routes. The new haul road will be constructed along the east perimeter to access and excavate a new pit floor elevation approximately 50

feet lower than the existing floor near the southeast edge of the expansion area. With continued use of materials beneath the existing pit floor, the lower pit floor will eventually become large enough to use as the processing and stockpile area for the long-term phase of the site usage. Despite exploratory drilling of the site in 2012, there is some uncertainty regarding hard areas possibly lying between borings that may limit full development of the excavation plan. Further uncertainty regarding ultimate excavation and site use longevity results from potential secondary uses by others or as an embankment material source for highway or other area facility. These uncertainties could affect the site use longevity considerably. The planned excavation would provide a source of winter traction sanding aggregate for the Cascade Lakes National Scenic Byway (the primary use) for a calculated 450 years, based on current use rates. Large facility projects in the general area of Bend with a need for embankment materials could easily remove 50,000 to 100,000 cubic yards per project if deemed to be a justified and authorized use of this material source. Due to the uncertainty regarding future uses of the cinder material and other area change that could affect or restrict site use, an estimated timeframe for the reclamation of the site is unknown but is likely in excess of 50 years. Timelines for final reclamation of slopes including the distribution of overburden soils and revegetation would be determined by the USFS.

Management Planning Direction

The Deschutes National Forest Land and Resource Management Plan provides standards and guidelines for an array of land uses referred to as Management Areas. The Scenic Views Management Areas are described in terms of desired future conditions for various settings and how these are to be met by specified activities or actions.

Management Area 9 – Scenic Views – According to the LRMP, the Goal for Scenic View areas is "To provide Forest visitors with high quality scenery that represents the natural character of Central Oregon." The Standards and Guidelines for Scenic View areas are generally met through vegetation management.

The following Standards and Guidelines from the LRMP apply:

M9-15, Desired Visual Condition for Timber / Ponderosa Pine Middlegrounds and Backgrounds: The Desired Visual Condition in these settings is to be managed for a "strong textural element". Untimbered openings are desirable and "natural-appearing openings can provide additional diversity" where this is lacking. These openings will normally range from ¼ acre to 20 acres. The expanded Quarry will be slightly larger than this normal range by approximately 5 to 10 acres.

M9-83 Minerals and Special Uses: Mineral developments, utilities, and electronic sites may be located in these areas if the facilities and associated improvements are located, designed, and maintained to blend with the characteristic landscape. Scenic quality objectives may not always be met when the viewer is within the special use site itself, due to the usual large scale of these facilities. However, when viewed from travel routes, recreation areas, and other sensitive viewer locations, Scenery Management Objectives should be met (Forest Plan, page 130). The expanded Quarry will be visually noticeable from only a few locations, as described above.

The Scenery Management System (SMS) is the methodology used by Forest Service landscape architects since 1996 to provide a visual impact assessment of effects to scenic resources which integrates social impacts to recreation visitors with physical impacts to the visitor experience.

This current and more holistic system includes the human element as an integral part of the ecosystem and has been the methodology used in place of the previous outdated Visual Management System (VMS) of 1974, which continues to be referenced in Forest Plans that have not yet been updated to

reference the current SMS instead. To facilitate this change in methodology, both systems have been referenced by applying SMS and referencing VMS in parentheses such as High Scenic Integrity Level (Retention – VMS).

The Forest Service implementing regulations currently establish a variety of Scenic Integrity Levels for Scenic Views – MA9 (LMRP page 4-121). These standards and guidelines include:

- High Scenic Integrity Level – SMS - Natural Appearing Landscape (Retention – VMS) - MA 9, SV-1 Foreground, SV-3 Middleground
- Moderate Scenic Integrity Level - SMS - Slightly Altered Landscape (Partial Retention – VMS) - MA 9, SV-2 Foreground, SV-4 Middleground
- Low Scenic Integrity Level – SMS - Altered Landscape (Modification – VMS or General Forest) - MA 8, GFO within Foreground as well as Middleground

Scenery Management Objectives are defined in terms of Scenic Integrity Levels which describe existing conditions and whether the landscape is visually perceived to be "complete" or not. The most complete or highest rating for Scenic Integrity Levels means having little or no deviation from the landscape character that makes it appealing and attractive to visitors and local residents. In addition to describing existing conditions, Scenic Integrity Levels also describe the level of development allowed and ways to mitigate deviations from the area's landscape character.

The goal of the Scenic Views Management Area is to provide high quality scenery representing the natural character of Central Oregon. The general theme and objectives of Scenic Views is for landscapes seen from selected travel routes and use areas to be managed to maintain or enhance the appearance of the areas being viewed. To the casual observer, results of activities will either not be evident or will be noticeable and visually subordinate to the natural landscape.

Mitigation Plan

ODOT will work very closely with the Deschutes National Forest office throughout the use and reclamation of this pit, in order to minimize the impact and to reclaim the pit to the appropriate standards.

Tree removal will be limited to the area required for the expanded mining area and the related haul road. Brush and grasses will remain within the expansion area after clearing of timber. This ground cover will be removed when a new portion of the expansion area is stripped of overburden soil to access underlying cinder material. In the period of time between timber removal and stripping of overburden soil, the visual change could be interpreted as meeting the M9-15 designation to provide a "strong textural element" within the visual resource area.

During active usage of the pit, soils will be stripped and stockpiled in berms around the outside edge of the actively mined area. As the mined area incrementally expands toward the eventual boundary, grasses and shrubs in these overburden soils will be allowed to re-vegetate naturally without additional seeding, the historically preferred approach, unless requested otherwise by the Deschutes National Forest offices. If the excavation encounters unsuitable or hard areas that effectively halt further development in a particular direction, the USFS and ODOT will evaluate the conditions and site use planning to determine the best approach to reclaim those slopes while continuing operations in other directions.

Once active mining is completed, slopes will be re-contoured to 2H:1V or flatter. Any crusher by-products, such as reject fines or scalpings stockpiled onsite, will be used to make steeper areas more gently sloping. The stockpiled soils will then be spread uniformly across the re-contoured slopes, amended as necessary, and vegetated with desired native plants (per Deschutes National Forest guidance and direction).

The surrounding forest will grow taller and thicker over time. This increase in screening will partially mitigate visual impacts of the lower elevation portions of the expansion area from the Lava Butte viewpoint. From the Road 41 viewpoint, it is estimated that continued growth of foreground forest will effectively screen the entire opened cinder pit and expansion area within approximately 20 years. From the Cascade Lakes Scenic Byway and related North Portal Scenic Byway Viewpoint, continued growth of the forest will further screen views of the unchanged west pit disturbed area over time.

Summary

The Oregon Department of Transportation is requesting to expand the existing Red Butte Cinder Pit #1 to provide a local source of mineral material for highway construction and maintenance purposes, including winter sanding for safety during snowpack and icy conditions.

The pit is visible from only a few locations on the ground, with the viewpoints of primary concern being the views from recreation users along US Forest Service Road 41 and also Lava Butte area in the Newberry National Volcanic Monument, located approximately 5.8 miles southeast of the pit. From the Lava Butte viewpoint, the pit is a middle-ground, minor feature. It has been determined that the expansion area will not be visible from the Cascade Lakes National Scenic Byway or the related North Portal Scenic Byway Viewpoint.

The pit is located within a ponderosa pine forest in an area of relatively level ground, broken by numerous buttes. These are related to the geology of the nearby Newberry National Volcanic Monument and the formative forces which have created the numerous peaks of the Cascade Mountains.

The Red Butte Cinder Pit #1 is an existing facility within the Deschutes National Forest, designated under the Deschutes National Forest Land and Resource Management Plan for Scenic Views as Moderate Scenic Integrity Level – SMS (Partial Retention - VMS). This designation means changes to the existing condition are allowed if the landscape appears slightly altered, and as long as the management activities remain subordinate to the character of the landscape. The current expansion proposal meets these criteria.

The pit will be expanded in all directions from the existing open pit. This expansion will be most noticeable from the top of the Lava Butte viewpoint. From this location the impact will be to increase the area of visible disturbance by about 25%. Within an estimated 20 years, the continued growth of the surrounding forest will partially screen the lower-elevation portion of the expansion area from the Lava Butte viewpoint. From the Road 41 viewpoint, project visual impacts would increase the disturbed area by about 30% - 35%. Growth of the foreground forest at this viewpoint will effectively screen the entire site, including the expansion area, in an estimated 20 years.

Actions such as regrading of slopes and revegetation of disturbed ground will be taken at some uncertain future time, likely in excess of 50 years, allowing for excavation to be finalized and 75 years for significant revegetation to occur. Partial or concurrent reclamation would be options considered during the long-term phase of site use. The reclamation would reduce and eventually eliminate the scenic quality impact of the red cinder pit within the generally dark green surroundings. These specific actions will be developed in close coordination with the Deschutes National Forest office.

In conclusion, the proposed expansion complies with existing management directions, scenic impacts will be minor and temporary, and ODOT will work closely with the USFS as the project progresses to minimize short- and long-term visual impacts from the expansion.

3.3.5 HERITAGE

A historic resources study was conducted for the proposed expansion of Red Butte Pit in May 2014. Reviewing the Oregon State Historic Preservation Office (SHPO) Historic Sites Database, the National Register of Historic Places (NRHP) database, and the USFS Historic Sites Database, no historic resources potentially eligible or listed in NRHP were identified within the boundary of the proposed expansion. Since there are no historic resources near the intended growth boundary, no adverse impacts to such would occur from the Red Butte Pit Expansion Project.

The ODOT Environmental Services Cultural Resources Staff, who meet the qualifications of 36 CFR Part 61 Appendix A in the fields of history and architectural history, internally reviewed the project using the standards set forth in Section 106 of the National Historic Preservation Act (16 U.S.C. 470f).

After review of the project area, the intended development would not affect historic resources.

Treaties provide that Native Americans would continue to have the right to erect suitable buildings for fish curing, privileges of hunting, gathering roots and berries, and pasturing stock on unclaimed lands. All alternatives are equal in their treatment of treaty rights and are expected to maintain treaty rights and opportunities into the future.

Potentially affected Tribes, the Burns Paiute, The Klamath Tribe and the Confederated Tribes of the Warm Springs, were contacted during the scoping process. No treaty resources were identified by any Tribe as at risk. Coordination with the Tribes is going.

3.4 REQUIRED AND ADDITIONAL DISCLOSURES AND CONSISTENCY WITH LAWS, REGULATIONS, POLICY AND PROCEDURES

This section discloses the effects of the alternatives on the human environment as specified by law, regulation, policy, or executive order. This section includes a brief summary of those laws, policies, and executive orders that are relevant to the proposed actions considered in this EA.

3.4.1 HUMAN HEALTH AND SAFETY

Under the action alternative, trees would be felled in the project area. The signing of project activity areas, in addition to notification of additional project-related traffic, would promote a safe environment for forest visitors during project implementation. Implementation of action alternatives would increase the potential for encounters on roadways between forest visitors and equipment associated with harvest. This elevated level of risk would be present for the short-term (approximately 5 years). Safety measures such as informational signing, flaggers, and road maintenance activities, such as brushing roads for increased visibility, would be enforced in the timber sale contract.

The work environment during all phases of logging operations would be physically demanding and potentially hazardous; effects to worker health and safety would be possible. Activities with the highest potential for serious injury would include tree felling and helicopter operations (helicopter may be used for prescribed fire ignition). All project activities carried out by Forest Service and Forest Service contract employees would comply with State and Federal Occupational Safety and Health

Administration (OSHA) standards. All Forest Service project operations would be consistent with Forest Service Handbook 6709.11 (Health and Safety Code).

The Clean Air Act lists 189 hazardous air pollutants to be regulated. Some components of smoke, such as polycyclic aromic hydrocarbons (PAH) are known to be carcinogenic. Probably the most carcinogenic component is benzo-a-pyrene (BaP). Other components, such as aldehydes, are acute irritants. In 1994 and 1997 , air toxins were assessed relative to the exposure of humans to smoke from prescribed and wildfires. The five toxins most commonly found in prescribed fire smoke were:

Particulate matter - Particulates are the most prevalent air pollutant from fires, and are of the most concern to regulators. Research indicates a correlation between hospitalizations for respiratory problems and high concentrations of fine particulates (PM2.5, fine particles that are 2.5 microns in diameter or less). Particulates can carry carcinogens and other toxic compounds. Overexposure to particulates can cause irritation of mucous membranes, decreased lung capacity, and impaired lung function. Particulate matter is analyzed for each alternative in the Air Quality section, page 75.

Acrolein - An aldehyde with a piercing, choking odor. Exposure severely irritates the eyes and upper respiratory tract.

Formaldehyde - Low-level exposure can cause irritation of the eyes, nose and throat. Long-term exposure is associated with nasal cancer.

Carbon Monoxide - CO reduces the oxygen carrying capacity of the blood, a reversible effect. Low exposures can cause loss of time awareness, motor skills, and mental acuity. Also, exposure can lead to heart attack, especially for persons with heart disease. High exposures can lead to death due to lack of oxygen.

Benzene - Benzene causes headache, dizziness, nausea and breathing difficulties, as well as being a potent carcinogen. Long-term exposure can cause anemia, liver and kidney damage, and cancer. The closest Smoke Sensitive Receptor Area (SSRA) to the analysis area is the city of Bend, Oregon; the communities of Sunriver and La Pine are also near the analysis area but are not as highly populated.

The greatest risk of exposure to airborne toxins from prescribed fires or wildfires would be to firefighters and forest workers implementing the prescribed burning. It is unlikely the general public would be exposed to toxin levels adverse to human health during implementation of prescribed burning operations in the Rocket analysis area because of the application of prescriptions designed to lessen the release of particulate matter. People who suffer from breathing ailments may experience some difficulty during periods of prescribed burning, especially during atmospheric conditions that do not favor dispersion of smoke. The Forest Service voluntarily follows the guidelines assigned by Oregon Smoke Management to limit statewide exposure on a cumulative basis, in compliance with the Clean Air Act.

Forest workers and firefighters can face unhealthy levels of smoke when patrolling or holding fire lines on the downward edge of a wildfire or prescribed fire, or while mopping intense hot spots. In most cases, measures such as education on the effects of short- and long-term exposure, rotation out of the smoke, and the use of respirators can reduce exposure levels. OSHA regulates exposure to hazardous materials in the workplace. All project activities carried out by Forest Service and Forest Service contract employees would comply with State and Federal OSHA standards.

3.4.2 WATER QUALITY AND FISHERIES

The project area contains no surface water. The nearest source of water to the Red Butte Cinder Pit Project is the Deschutes River located approximately 0.7 miles to the southeast. There are no Riparian Habitat Conservation Areas within the project area. Therefore, direction in INFISH does not apply. The project would have no impact to fisheries habitat or populations, including the Region 6 sensitive species Interior Columbia River Basin redband trout (*Oncorhynchus mykiss gairdneri*). In addition there would be no impact to Region 6 sensitive aquatic invertebrate species of Indian Ford Juga (*Juga hemphilli* ssp) and a caddisfly (*Rhyacophila chandleri*). There would be no impact to ephemeral, intermittent, or perennial stream channels, wetlands, riparian areas, or Riparian Habitat Conservation Areas.

3.4.3 WETLANDS AND FLOODPLAINS

Flood plains

Executive Order 11988 provides direction to avoid adverse impacts associated with the occupancy and modification of floodplains. Floodplains are defined by this order as, ". . . the lowland and relatively flat areas adjoining inland and coastal waters, including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent [100-year recurrence] or greater chance of flooding in any one year."

No flood plains would be impacted by this project. None are located within or adjacent to the project area.

Wetlands

Executive Order 11990 provides direction to avoid adverse impacts associated with destruction or modification of wetlands. Wetlands are defined by this order as, ". . . areas inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds."

No wetlands would be impacted by this project. None are located within or adjacent to the project area.

3.4.4 PRIME FARMLAND, RANGELAND, AND FORESTLAND

All alternatives are consistent with the Secretary of Agriculture memorandum 1827 for the management of prime farmland. The Red Butte Pit project area does not contain any prime farm land or rangelands. Prime Forestland, as defined in the memorandum, is not applicable to lands within the National Forest System.

3.4.5 CIVIL RIGHTS AND ENVIRONMENTAL JUSTICE

Civil Rights

The Civil Rights Policy for the USDA, Departmental Regulation 4300-4 dated May 30, 2003, states that the following are among the civil rights strategic goals; (1) managers, supervisors, and other employees are held accountable for ensuring that USDA customers are treated fairly and equitably, with dignity and respect; and (2) equal access is assured and equal treatment is provided in the delivery of USDA programs and services for all customers. This is the standard for service to all customers regardless of race, sex, national origin, age, or disabilities.

Disparate impact, a theory of discrimination, has been applied to this projects planning process in order to reveal any such negative effects that may unfairly and inequitably impact beneficiaries regarding program development, administration, and delivery. The objectives of this review and analysis are to prevent disparate treatment and minimize discrimination against minorities, women and persons with disabilities and to ensure compliance with all civil rights statutes, Federal regulations, and USDA policies and procedures.

The project alternatives, given the size of potential social and economic effects, are not likely to result in civil rights impacts to Forest Service employees or customers of its program.

Environmental Justice

Executive Order 12898 directs the agency to identify and address, "...as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations...." The intent of the order is to assure the fair treatment and meaningful involvement and consideration of all people. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from the execution of a federal actions. Outreach and public involvement for this project has been extensive and at various scales within various communities of interest.

In order to identify and address environmental justice concerns, the EO states that each agency shall analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and native Americans as part of the NEPA process.

There would be no discernible impacts among the alternative in the effects on Native Americans, women, other minorities, or the Civil Rights of any American citizen.

The action alternatives does not appear to have a disproportionately high or adverse effect on minority or low-income populations. Scoping did not reveal any issues or concerns associated with the principles of Environmental Justice. No mitigation measures to offset or improve adverse effects to these populations have been identified. All interested and affected parties will continue to be involved with the public involvement and decision process.

3.4.6 Irreversible and Irretrievable Commitments of Resources

Irreversible resource commitments are actions that either deplete a non-renewable resource or disturb another resource to the point that it cannot be renewed within 100 years. Irreversible commitment of resources (e.g., the loss of future options for resource development or management, especially of nonrenewable resources such as minerals or cultural resources) or the irretrievable commitment of resources (e.g., the lost production or use of renewable natural resources during the life of the operations).

There are irreversible resource commitments of timber production, wildlife habitats, and soil production on 19 acres under the Action Alternative. Vegetation would be removed, and reclamation would not occur until the cinder pit is decommissioned.

3.4.7 Climate Change

The Forest Service does not have a national policy or guidance for managing carbon, and the tools for estimating carbon and sequestration are not fully developed. However, the Forest Service has characterized the agency's response to the challenges presented by climate change as "one of the most urgent tasks facing the Forest Service" and stressed that "as a science-based organization, we need to be aware of this information and to consider it any time we make a decision regarding resource management, technical assistance, business operations, or any other aspect of our mission." Current direction for addressing climate change issues in project planning and the NEPA process is provided in the document *Climate Change Considerations in Project Level NEPA Analysis* (USDA FS 2009). This document outlines the basic considerations for assessing climate change in relation to project-level planning. It is agency policy to consider, when appropriate, the effects of a proposed project on climate change (i.e., greenhouse gas [GHG] emissions and carbon cycling) as well as the effects of climate change on a proposed project. However, the agency also recognizes that it is not currently feasible to quantify the indirect effects of individual or multiple projects on global climate change and therefore determining significant effects of those projects or project alternatives on global climate change cannot be made at any scale. (USDA FS 2009.)

Regarding this project's potential effect on climate change, the Intergovernmental Panel on Climate Change has summarized the contributions of human activity to climate change in its Fourth Assessment Report (IPCC 2007). The top three human-caused contributors to greenhouse gas emissions (1970 – 2004) are fossil fuel combustion (56.6 percent of global total), deforestation (17.3 percent), and agriculture/waste/energy (14.3 percent). This project would result in deforestation of 19 acres.

The potential effect on carbon cycling is associated with vegetation removal, particularly conversion of forest or other vegetated cover to bare ground. Under the action alternative, 19 acres would be converted to a detrimental soil condition incapable of supporting vegetation under the Proposed Action. This is less than 1% of the watershed. The scope and degree of change from the proposed action is minor relative to the amount of forested land available as a whole.

At the global scale, the proposed action's direct and indirect contribution to greenhouse gasses and climate change would be negligible, and therefore the project's cumulative effects on greenhouse gasses and climate change would also be negligible.

CHAPTER 4 – CONSULTATION AND COORDINATION

4.1 PUBLIC INVOLVEMENT

The Red Butte Pit Expansion project was first published to the Deschutes and Ochoco National Forest project webpage on 8/16/2013 at: http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=42639

This project was first published in the Deschutes National Schedule of Proposed Actions (SOPA), a quarterly publication, in October 2013 and has appeared in each quarterly SOPA since then. This is a quarterly report that is distributed to interested individuals, organizations, and agencies Forest-wide. The SOPA is automatically updated and available on the Deschutes and Ochoco National Forest webpage at: http://www.fs.fed.us/sopa/forest-level.php?110601.

A detailed description of the proposed action was mailed and/or emailed on 8/17/2013, to approximately 100 forest users and concerned publics, soliciting comments and concerns related to this project. No comments were received. This letter was also mailed to the Burns Paiute Tribe, The Klamath Tribe, and the Confederated Tribes of the Warm Springs. Coordination and consultation with the tribes is ongoing.

4.2 CONSULTATION WITH OTHERS

Consultation has occurred with the Oregon State Historic Preservation Office (SHPO) following guidelines in the Regional Programmatic Agreement among USDA-Forest Service, the Advisory Council on Historic Preservation, and the Oregon SHPO.

Consultation with U.S. Wildlife Service (USFWS) was not required as there will be no effect to any listed or proposed threatened or endangered species.

The consultation with the Burns Paiute Tribe, The Klamath Tribe, and Confederated Tribes of the Warm Springs has occurred and coordination is ongoing.

4.3 INTERDISCIPLINARY PARTICIPATION

Below are the members of the interdisciplinary team responsible for coordination, conducting and contributing the environmental analysis for this project

USFS ID Team Member	Title
Alicia Underhill	ID Team Leader, NEPA Oversight, Writer/Editor
Elizabeth Johnson	Secondary ID Team Leader, NEPA Oversight, Writer/Editor
Shelley Borchert	Wildlife Biologist
Charmane Powers	Botanist
Matt Mawhirter	Cultural and Heritage Resources
Steve Bigby	Road Manager
Tom Walker	Fisheries
Robin Gyorgyfalvy	Scenery
Bart Wills	Minerals

Additional Support

Larissa Rudnicki	ODOT Historic Resources Specialist
Michael W. Shippey	ODOT Landscape Architect

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APPENDIX B. SCENIC VIEWPOINT SIMULATIONS

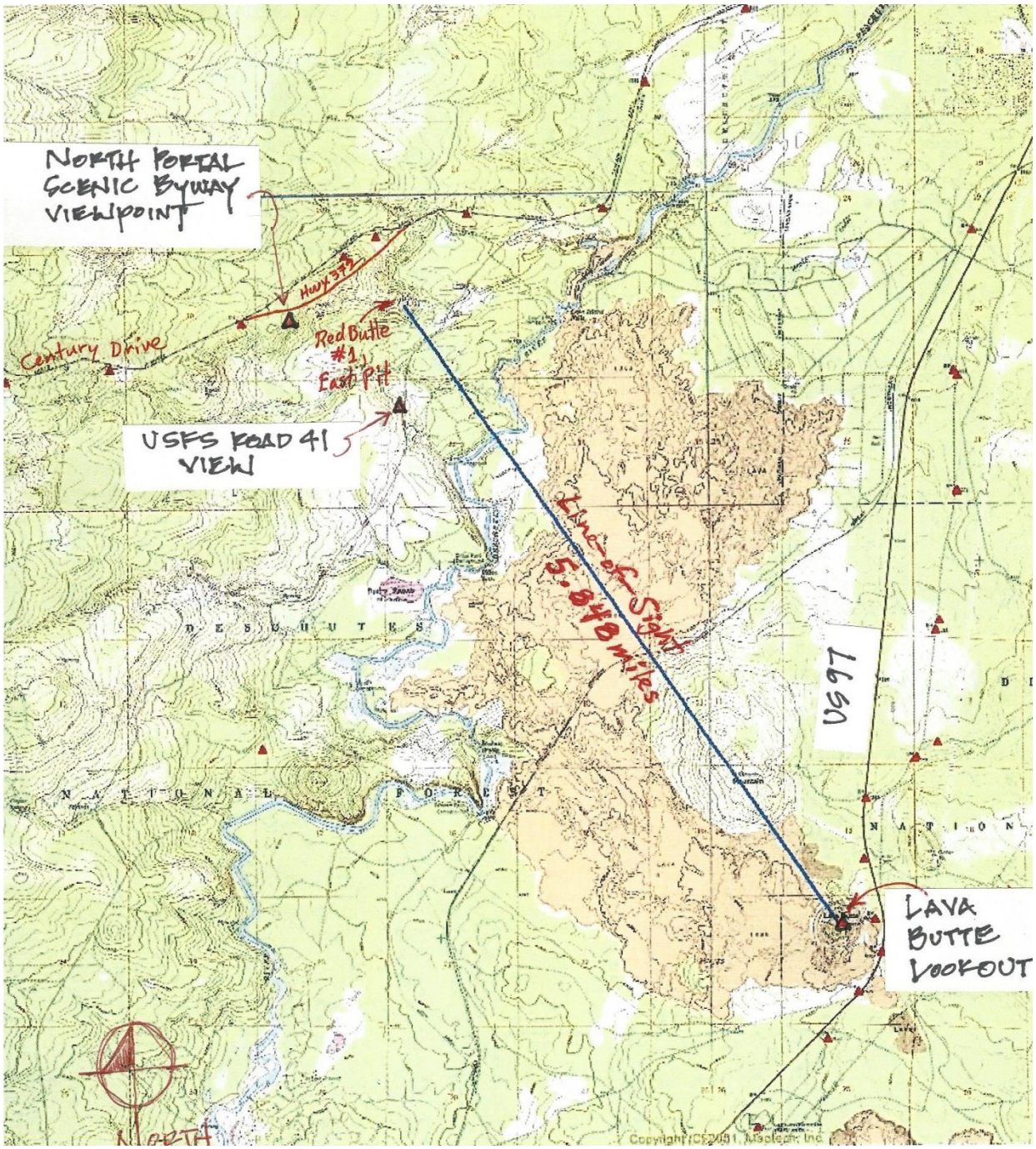


Figure A. 1. Map of Red Butte Cinder Pit #1 and Viewpoints

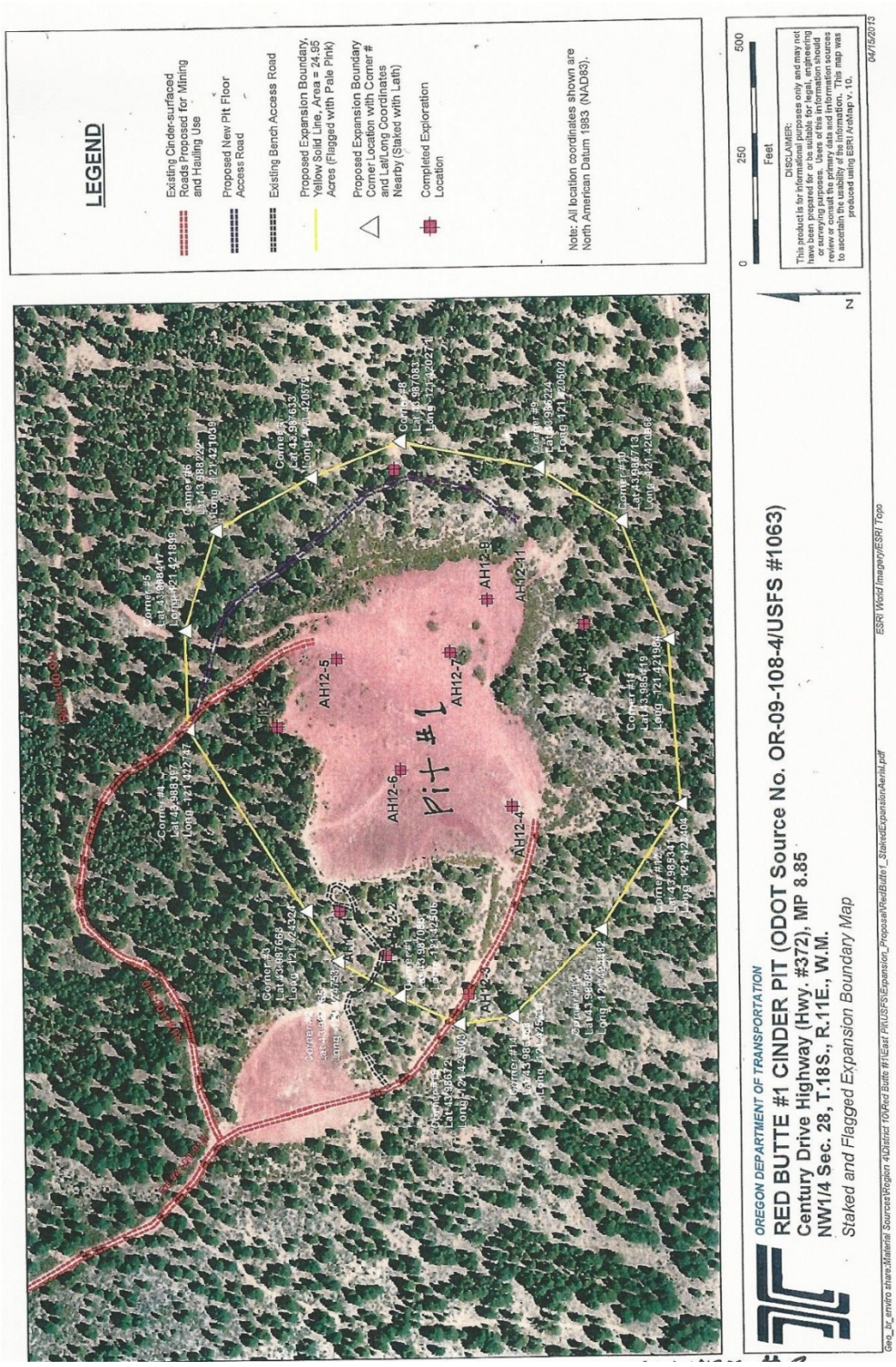
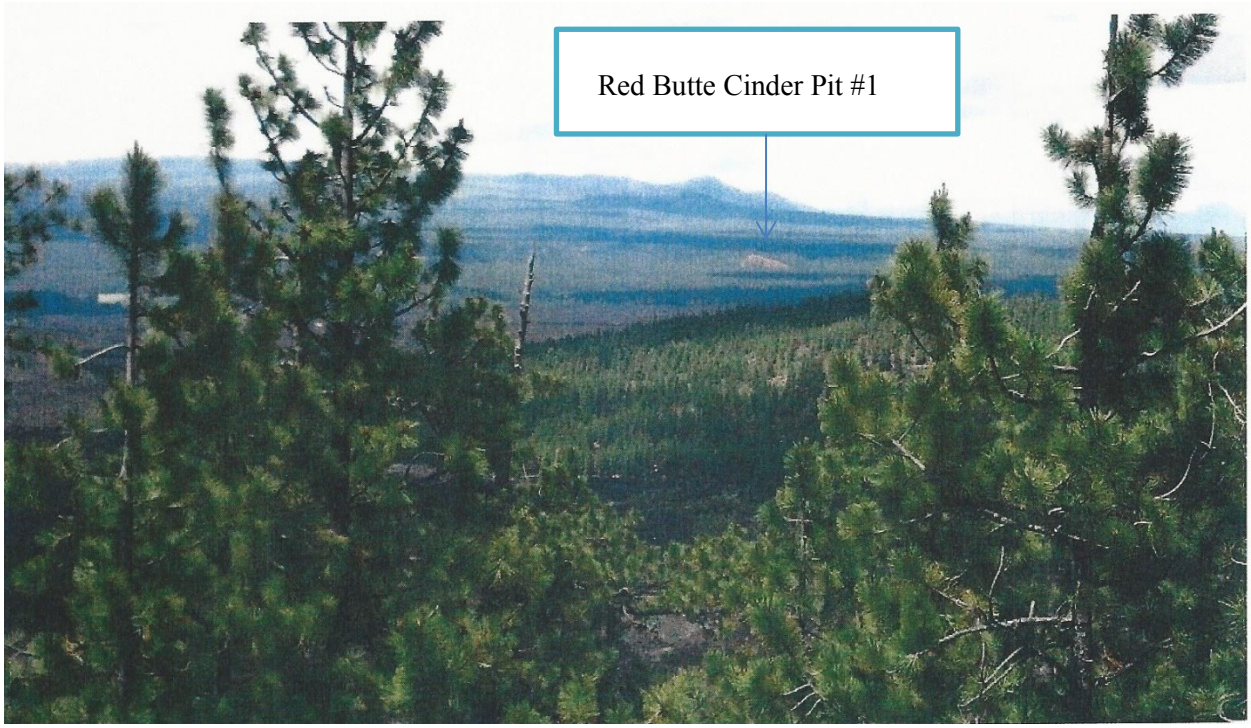
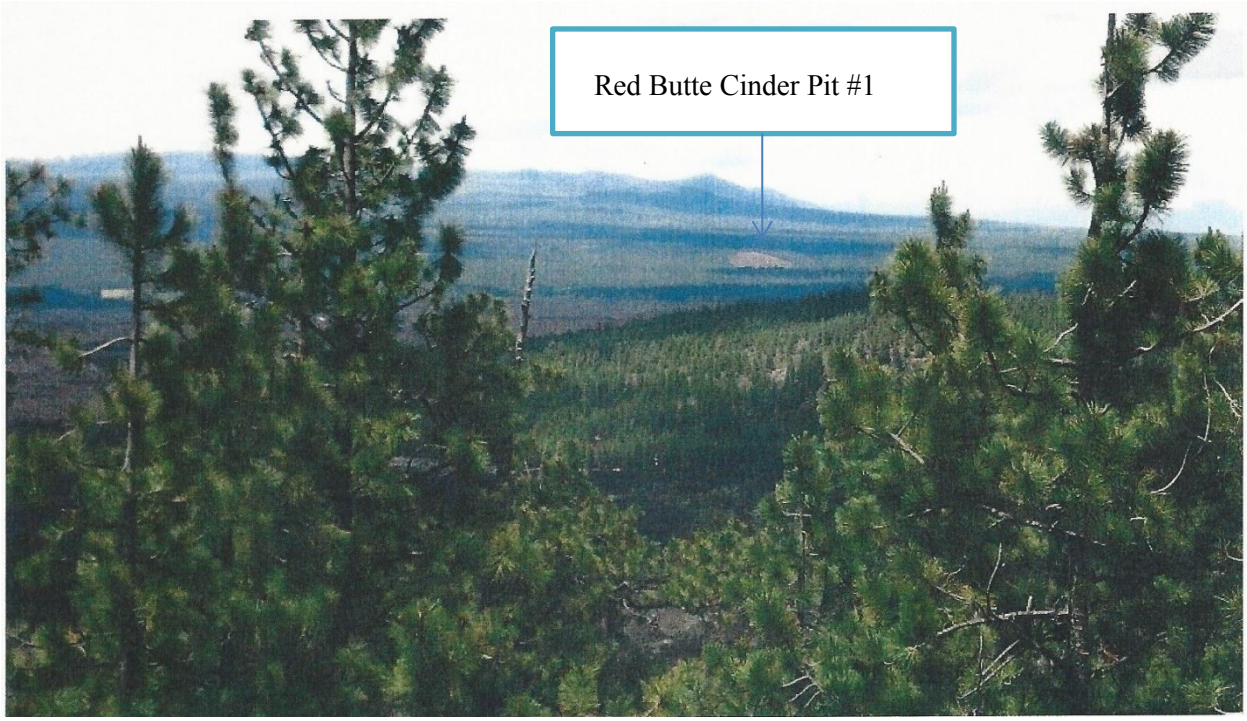


Figure A. 2 Plan View of Red Cinder Pit #1, Existing Conditions with Expansion Limits



Existing Condition



Expanded Condition

Figure A. 3. Photo Simulations from Lava Butte

Existing Conditions

Expanded Condition (Unchanged)

Figure A. 4. Photo Simulations from North Portal

USFS Road 41 Existing View

Expanded Condition

Figure A. 5. Photo Simulations From US Forest Service Road 41

Existing Condition (2014)

Expanded Condition (2065 or later)

Post-Restoration Condition (2085 or later)

Figure A. 6. Axonometric Sketches of Red Butte Cinder Pit #1