Chapter 3
Affected Environment and Environmental Consequences

3.1 INTRODUCTION

This chapter describes the existing condition of the environment that could be affected by implementing the Proposed Action or alternatives, and the anticipated effects that could occur to the natural and human environment from construction, operation, and maintenance of the Proposed Action or alternatives. The information for the affected environment and the environmental consequences is provided for each resource and environmental topic analyzed in the Draft EIS. Section 3.2 of this chapter is organized into resource subsections as follows:

- 3.2.1 Earth Resources
  (geological hazards, soils, minerals, and paleontological resources)
- 3.2.2 Water Resources
- 3.2.3 Vegetation Resources
- 3.2.4 Wildlife Resources
- 3.2.5 Fish Resources
- 3.2.6 Land Use, Agriculture, Recreation, and Transportation
- 3.2.7 Visual Resources
- 3.2.8 Cultural Resources
- 3.2.9 National Historic Trails
- 3.2.10 Air Quality and Climate Change
- 3.2.11 Socioeconomics and Environmental Justice
- 3.2.12 Public Health and Safety
  (electromagnetic fields and noise)

These topics were selected based on federal regulatory requirements and policies, concerns of the lead and cooperating agencies, and issues derived from agency and public comments during scoping.

Section 3.3 discusses the potential cumulative effects on specific resources that could be caused by the Proposed Action or alternatives. Cumulative effects are those effects that could result from the incremental effect of the Proposed Action or alternatives when added to other past, present, and reasonably foreseeable future actions. Section 3.4 describes amendments to BLM resource management plans and the USFS *Wallowa-Whitman National Forest Land and Resource Management Plan* that may be necessary to approve the proposed B2H Project.

3.1.1 Affected Environment

3.1.1.1 Resource Inventory

The information used to describe the affected environment and anticipated environmental consequences is predominantly derived from existing data sources but is also derived from existing plans, reports, literature, maps, and agency databases and geospatial information. For some resources, information from ground surveys or interviews with specialists supplemented the existing information. Those instances are described in each resource subsection. The analysis areas from which information was gathered vary by resource and are described in each resource subsection.

3.1.1.2 Overview

The Proposed Action and alternatives are located in eastern Oregon and southwestern Idaho, an area of diverse geography, hydrology, and natural resources. The B2H Project area includes a portion of the Columbia Plateau and the northern Great Basin physiographic provinces. The major rivers in the project area are the Columbia River on the north and the Snake River on the east.

Some issues, resources, and uses in the project area are common to all portions of the B2H Project. For example, the Proposed Action and most of the alternatives parallel and cross the Oregon National Historic Trail, which is a cultural and land use consideration for the proposed B2H project. Likewise, local Native American tribes have treaty and trust rights over large areas of the general project area. Places important to tribes are existing portions of the Oregon Trail and associated sites. However, many aspects of the region are more limited in scope and extent. To describe the affected environment and environmental consequences in the context of the geography, land uses, and resources, the B2H Project area is divided into six project segments (Figure 3-1).

Segment 1—Morrow-Umatilla

The Morrow-Umatilla Segment of the B2H Project area includes most of Morrow and Umatilla Counties and includes the Proposed Action from milepost (MP) 0 to approximately MP 95. The Horn Butte and Longhorn Alternatives and the Longhorn Variation are located in Segment 1. The geography of Segment 1 is a mix of farmland and grassland/shrubland rising into the foothills of the Blue Mountains to the east. Agricultural uses include extensive irrigated agriculture, dairies, and tree farms. The rivers and streams in Segment 1 drain to the Columbia River and so contain anadromous fish in addition to resident fish. Segment 1 contains the only known occurrences of the Washington ground squirrel in the B2H Project area. Other land uses in Segment 1 are the Naval Weapons Systems Training Facility Boardman—including its associated restricted-use airspace, military aviation training routes, and avigation easements—and the Umatilla Indian Reservation.

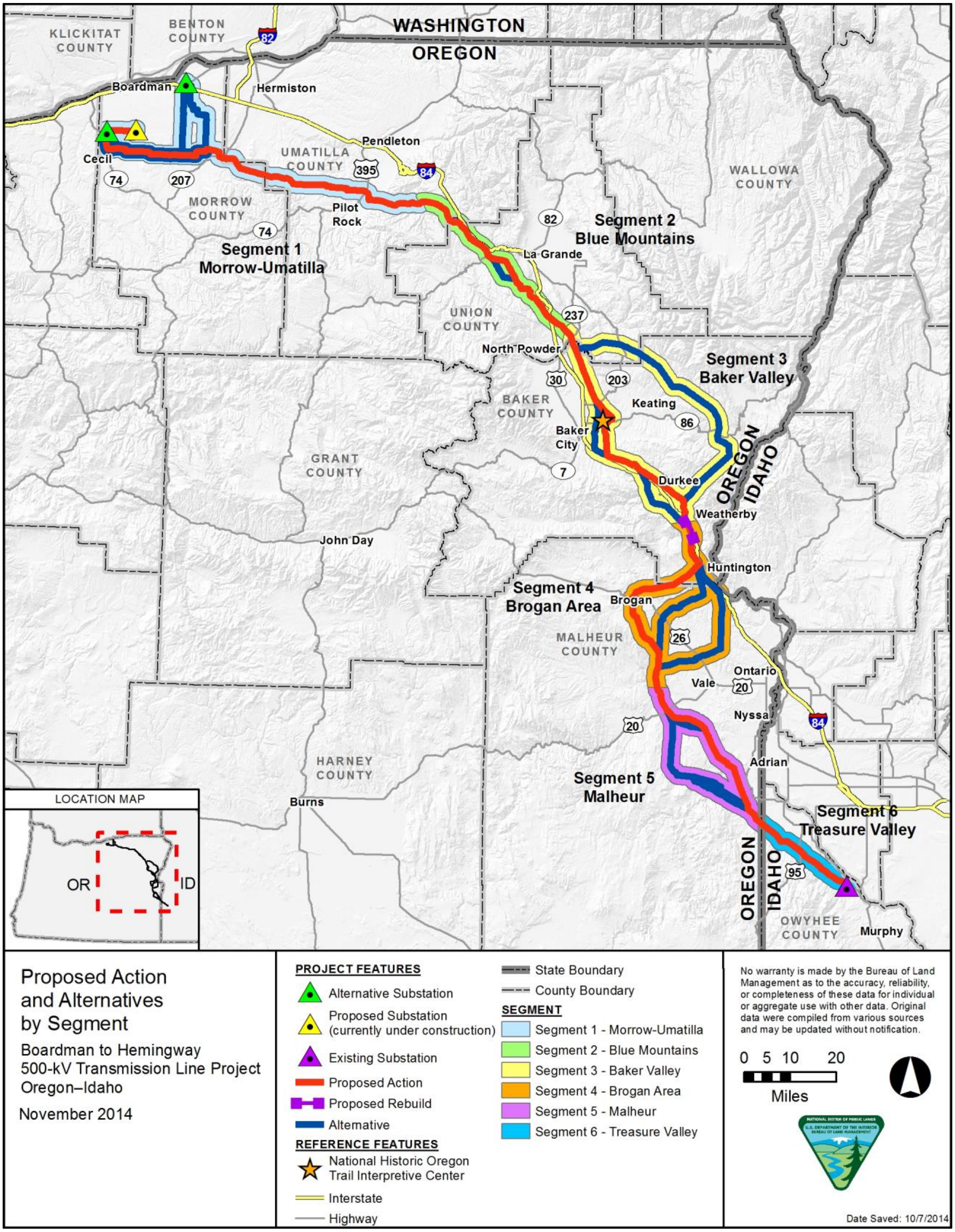

Figure 3-1. Proposed Action and Alternatives by Segment

SEGMENT 2—BLUE MOUNTAINS

The Blue Mountains Segment of the project area is located primarily in Union County and includes the Proposed Action from approximately MP 95 to approximately MP 125. The Glass Hill Alternative is located in Segment 2. The geography of Segment 2 is mountainous, with forest as the predominant vegetative/habitat type. The Proposed Action or alternatives would be located predominantly on the Wallowa-Whitman National Forest. The city of La Grande, Oregon, is in Segment 2. Streams and rivers in Segment 2 drain to the Upper Grande Ronde River, which drains to the Snake River and contains anadromous and resident fish. Big-game winter and summer ranges are abundant in Segment 2.

SEGMENT 3—BAKER VALLEY

The Baker Valley Segment of the project area is located primarily in Baker County and includes the Proposed Action from approximately MP 125 to approximately MP 196 near Lime, Oregon. The Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives are located in Segment 3. A number of cities and towns are located in Segment 3, the largest of which is Baker City, Oregon. The western side of Baker Valley is an agricultural area, while central Baker Valley is open land with predominantly sagebrush and grassland/shrubland vegetation/habitat. The eastern side of Baker Valley has irrigated and dryland agricultural operations along drainages, and it grades into the foothills of the Wallowa Mountains and the Wallowa-Whitman National Forest. Rivers and streams drain to the Powder River, a major tributary of the Snake River. Both public and private lands would be affected by the Proposed Action and alternatives. The central Baker Valley is an important habitat area for a geographic subdivision population of Greater Sage-Grouse. Important land uses in Segment 3 include the National Historic Oregon Trail Interpretive Center and the residential and agricultural land uses around Baker City.

SEGMENT 4—BROGAN AREA

The Brogan Area Segment is located in southern Baker County and northern Malheur County and includes the Proposed Action from approximately MP 196 to approximately MP 236 just north of the Malheur River. The Willow Creek and Tub Mountain South Alternatives are located in Segment 4. The Brogan area centers on a farming area along Willow Creek characterized by irrigated agriculture and some dryland farming. The Proposed Action or alternatives would be located on both private and public lands in Segment 4. The two main drainages are Birch Creek in the northern portion of Segment 4 and Willow Creek in the southern portion, both of which are tributaries of the Snake River. The vegetation/habitat outside the agricultural areas is predominantly grassland/shrubland and sagebrush. Important Greater Sage-Grouse habitat has been identified in the northern portions of Segment 4.

SEGMENT 5—MALHEUR

The Malheur Segment is located in Malheur County and includes the Proposed Action from approximately MP 236 to the Oregon/Idaho border at approximately MP 276. The Malheur A, Malheur S, and Double Mountain Alternatives are located in Segment 5. The geography of the Malheur Segment is predominantly northern Great Basin topography, hydrology, and vegetation/habitat, with agricultural and rural residential uses in the eastern portion of the area. The Proposed Action or alternatives would be located mostly on public land in Segment 5. The agricultural use in this section of the project area is predominantly grazing. The main drainage is the Owyhee River, a tributary to the Snake River, which would be crossed by all of the alternatives. Other land uses in Segment 5 include the wild and scenic–eligible Owyhee River, historic Owyhee Reservoir, and BLM lands with wilderness characteristics.

Segment 6—Treasure Valley

The Treasure Valley Segment is located entirely in Owyhee County, Idaho, and includes the Proposed Action from the Oregon/Idaho border at approximately MP 276 to the Hemingway Substation at approximately MP 305. Irrigated agriculture and grazing are the primary land uses in this segment. The Proposed Action would be located in the foothills on the southwest side of Treasure Valley, primarily on public land, away from most agricultural operations. Other land uses include the Hardtrigger Wild Horse and Burro Management Area and Idaho state lands.

3.1.2 Environmental Consequences

The potential environmental consequences of the Proposed Action and alternatives are based on how a resource would be affected and the degree of change that could result from implementation of an action.

3.1.2.1 Definitions

B2H Project-related impacts can be categorized as direct or indirect (40 CFR 1508.8) and can be short-term, long-term, or permanent.

Direct impacts are caused by the action and occur at the same time and place. For example, the clearing and grading of sagebrush habitat during construction of a road would be considered a direct impact. Indirect impacts are those impacts caused by the action that occur farther away from the area of activity or are later in time. An example of an indirect impact is the introduction of noxious weeds to newly disturbed soils where, over time, the noxious weeds could become established and out-compete native species, leading to a reduction in forage availability or conversion to unsuitable habitat for one or more wildlife species.

Short-term impacts cease following an activity of specific duration (such as facility construction) or result in conditions that are capable of being restored to preproject functionality within a relatively short amount of time. For purposes of this EIS, the time frame for a short-term effect is approximately 3 years (the planned 24- to 30-month construction period, plus a 6-month postconstruction reclamation and restoration period). Long-term impacts result from ongoing activities or impacts that persist for long periods of time. For the purposes of this EIS, the time frame for a long-term effect is greater than 3 years (generally the period of project operations). Permanent impacts result in a permanent change in condition or function of the resource being addressed that would persist even after project operations cease and decommissioning is completed.

Effects of the B2H Project may also be cumulative with the effects of other actions. Cumulative effects are defined in the Council on Environmental Quality regulations as ". . . the impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions" (40 CFR 1508.7).

Significance is defined by the Council on Environmental Quality regulations as a measure of the intensity and context of the effects of an action on, or the importance of that action to, the human environment (40 CFR 1508.27). Significance is a function of the beneficial and adverse effects of an action on the environment.

The intensity of the environmental effect can also vary. Qualitative and quantitative variables of resource sensitivity, resource quality, and estimated ground disturbance were considered in estimating the intensity of effects. The definitions of the terms "high," "moderate," and "low" impact for each resource are provided in the resource subsections. However, the following is a general description of the three levels of impact intensity:

- *High-intensity impact*—could cause substantial change or stress to an environmental resource or use (adverse or exceptional beneficial effects)
- *Moderate-intensity impact*—could cause some change or stress to an environmental resource or use (readily apparent effects)
- *Low-intensity impact*—could be detectable but slight with no identifiable impact on an environmental resource or use

Context means that the effect of an action must be analyzed within a framework or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both short- and long-term impacts are relevant.

3.1.2.2 Impact Assessment

The primary generator of impacts associated with transmission line projects is ground-disturbing activity. The majority of the ground-disturbing impacts would result from the following activities:

- Building new roads or improving existing roads for access where needed
- Preparing tower sites, staging areas, and ancillary facility sites
- Assembling and erecting tower structures
- Stringing conductors
- Maintaining structures

Assessment of Initial Impacts

Resource specialists evaluated the amount and locations of ground-disturbing activity associated with the B2H Project based on the descriptions of project construction, operations, and maintenance activities in IPC's November 2011 Revised Plan of Development, and they determined the types, duration and intensities of impacts that could occur on the resource. For impacts not associated with ground-disturbing activities, impacts were based on the presence of project facilities (i.e., the transmission structures, permanent roads, and other permanent project features and facilities). The BLM also considered factors such as noise and electromagnetic field data, air quality and climate change information, and economic and demographic information. Qualitative and quantitative variables and evaluation of the context of effects were used to predict intensity of impacts.

Application of Design Features

A number of steps were taken during siting (location selection) for the proposed B2H Project to avoid sensitive resources and to minimize the effects of project construction, operation, and maintenance on resources and the public. Chapter 1 identifies a series of framework plans to govern project-related activities. The relevant framework plans address blasting management, operations and maintenance, and stormwater pollution prevention, among other topics. The framework plans would be finalized and incorporated into IPC's final Plan of Development, and would be included as terms and conditions of approval of the right-of-way grant and special-use authorization. Appendix C, as well as each Chapter 3 resource subsection, includes design features that have been developed to avoid or minimize impacts on resources during project construction, operation, and maintenance.

A number of standards and best management practices to avoid and minimize effects on resources are also included in this Draft EIS. For the B2H Project, these protective measures are collectively called "design standards" and include environmental protection measures from the 2011 Revised Plan of Development, agency best management practices, interagency operating procedures from the West-Wide Energy Corridor Records of Decision (BLM 2009; USFS 2009), and standards and practices from agency handbooks and manuals and other sources.

Resource specialists evaluated the design features for each resource and applied them to the impacts to determine what the effects would be with successful implementation of the design features. In many instances, design features would likely reduce the intensity of the initial impact, resulting in an anticipated residual impact.

Description of Residual Impacts

The anticipated residual impacts on each resource, assuming successful implementation of applicable design features, are discussed in each resource subsection. The description of residual impacts is quantified based on available information. Site-specific application of design features and descriptions of residual impacts would occur when final project engineering and design is completed before preparation of the Final EIS.

Mitigation

For this Draft EIS, the term "mitigation" describes measures taken after application of design features to address any residual impacts. Mitigation could include compensatory, off-site, or other mitigations to further reduce or compensate for residual impacts. A Habitat Mitigation Plan for Greater Sage-Grouse is in preparation but has not been finalized for this Draft EIS. In May 2013, BLM, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and Idaho Department of Fish and Game finalized the *Mitigation Blueprint for Greater Sage-Grouse, Boardman to Hemingway Transmission Line Project*. The Mitigation Blueprint is a conservation strategy framework developed to minimize the amount and significance of impacts from the B2H Project on Greater Sage-Grouse; it is included as Appendix E of this Draft EIS and will guide IPC's development of a Habitat Mitigation Plan for the Final EIS.

3.2 RESOURCES ANALYZED

The affected environment and environmental consequences of the Proposed Action and alternatives are described for each resource in this section. Each resource subsection is organized as follows:

- Introduction
- Regulatory Framework
- Issues Identified for Analysis
- Methodology
- Affected Environment
- Environmental Consequences (initial impacts, design features, residual impacts)
- Mitigation Planning

Regulatory Framework

Implementation of the Proposed Action or alternatives would need to be consistent and comply with laws, regulations, and policies of tribes, federal agencies, and state and local governments. Each resource section includes a summary of the relevant laws, regulations, and policies.

Issues Identified for Analysis

Scoping is the process by which federal agencies solicit input on the issues, impacts, and potential alternatives that a project EIS will address, and determine the extent to which those issues and impacts will be analyzed. Scoping helps to ensure that a range of reasonable alternatives will be evaluated in an EIS, as required by the Council on Environmental Quality's National Environmental Policy Act regulations (40 CFR 1502.15). Each resource subsection includes a list of the issues raised during scoping that were analyzed for this Draft EIS.

Methodology

Each resource subsection includes a description of the resource analysis area and the methodology used to gather information and assess the environmental consequences of the Proposed Action and alternatives.

The analysis area is described in each resource subsection. The analysis differs depending on the resource. For example, the analysis area for geological hazards, soils, minerals, and paleontological resources is 0.5 mile on each side of the centerline of the transmission line, whereas the analysis areas for air quality and visual resources are larger.

Affected Environment

In accordance with National Environmental Policy Act regulations, the affected environment sections describe the existing condition of the human and natural environment in the areas that could be affected by the Proposed Action and alternatives. This information serves as a baseline from which to measure and assess the impacts that are anticipated to result from implementing the B2H Project.

Environmental Consequences

The environmental consequences for each resource are described in the manner outlined above in Section 3.1.2.2. The initial impacts, applicable design features, residual impacts, and mitigation planning are described in each resource subsection; Section 3.3 describes cumulative effects for each of the resources. Section 3.4 provides information on potential land use plan amendments.

Mitigation Planning

This Draft EIS describes the ongoing mitigation planning work and the types of mitigation measures available to address residual impacts, but it does not quantify the mitigation that could be required once final project engineering and design is completed.

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3.2.1 Earth Resources (Geological Hazards, Soils, Minerals, and Paleontology)

3.2.1.1 Introduction

This section describes earth resources within the B2H Project analysis area, the regulatory framework governing these resources, scoping issues, affected environment, methodology of resource evaluation, and environmental consequences from the Proposed Action and alternatives. The following earth resources are addressed:

- Geological hazards that could affect the B2H Project, including earthquakes and landslides
- Soil characteristics in the analysis area, such as soil erosion and compaction, soil suitability for reclamation, and soil resources that could be removed from productivity
- Leasable, locatable, and salable mineral deposits
- Paleontological resources that are known to exist in the analysis area

Geological hazards, soils, minerals, and paleontological resources occur, with little variation, throughout the B2H Project area; therefore, the affected environment discussion for each earth resource is projectwide rather than by project segment. Similarly, environmental impacts from the Proposed Action and alternatives are presented collectively for each earth resource except for soils—the impacts on soil in two project segments are presented separately because these impacts notably differ from impacts in the rest of the project area.

3.2.1.2 Regulatory Framework

Geological Hazards

Federal

No federal regulations apply to the management of geological hazards. However, the 2012 International Building Code (International Code Council 2011) provides building standards for structures, including special standards for structures located within seismically active areas. Local building codes may require that B2H Project structures conform to the international standards.

State

Oregon's Energy Facility Siting Council (EFSC) oversees facility-siting standards and site-certificate applications. Oregon Administrative Rule (OAR) 345-022-0020 (Structural Standard) and OAR 345-021-0010(1)(h) (Contents of an Application, Exhibit H) outline EFSC facility standards and application requirements related to geological and soil stability. To issue a site certificate, the EFSC "must find that the applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards" (OAR 345-022-0020(1)(b)).

SOILS

FEDERAL

The Environmental Protection Agency (EPA) oversees the prevention and management of soil erosion through stormwater management regulations under the Clean Water Act (33 U.S.C. 1251 et seq.). The Clean Water Act's National Pollutant Discharge Elimination System (NPDES) stormwater program requires operators of construction sites 1 acre or larger (as well as smaller sites that are part of a larger common plan of development) to obtain authorization to discharge stormwater under an NPDES construction stormwater permit (40 CFR 122). The development and implementation of stormwater pollution prevention plans (SWPPPs) are the focus of NPDES stormwater permits for regulated construction activities.

Federal agencies also have handbooks and other guidance governing soil management that are applicable to their jurisdictions. Applicable U.S. Forest Service handbooks (FSHs), found in Forest Service Manual (FSM) 2500, *Watershed and Air Management* (USFS 2010), for evaluating soil conditions on National Forest System lands include the following:

- *Soil Management Handbook* (FSH 2509.18)
- *Soil and Water Conservation Practices Handbook* (FSH 2509.22)
- *Watershed Conservation Practices Handbook* (FSH 2509.25)
- *Watershed Protection and Management* (FSH 2520, R6 Supplement 2500-98-1)
- Interim Directive No. 2520-2013-1 (BMPs for sediment reduction from forest roads)

The BLM's guidance document for permitting and drilling oil and gas wells, the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (referred to as the Gold Book) (BLM 2007a), also contains general standards for road construction and stormwater best management practices (BMPs). BLM Instruction Memorandum OR-2011-074 *Incorporating Road and Sediment Delivery Best Management Practices into Resource Management Plans* (BLM 2011), list BMPs that provide direction regarding road maintenance practices and road-related actions with the intention to minimize or prevent sediment delivery to waters of the United States in compliance with the Clean Water Act of 1972 and its revisions. The West-Wide Energy Corridor Programmatic EIS (DOI and BLM 2008) provides federal guidance for cross-country utility rights-of-way and refers to the BLM Gold Book for stormwater management procedures for the construction of linear facilities.

Several BLM resource management plans (RMPs) and the Wallowa-Whitman National Forest's land and resource management plan (LRMP) (USFS 1990) contain qualitative soil management requirements that would be applicable to the B2H Project.

Baker Resource Management Plan and Record of Decision

The *Baker RMP* (BLM 1989) directs that soils be managed to maintain productivity and minimize erosion. To implement that management directive, the plan states the following:

- Actions should be planned to coordinate soil, water, and air concerns and activities with other resources in all phases of management actions, from the planning stage to final monitoring of the results.
- Review all proposed resource projects and surface-disturbing activities to ensure that soils and watersheds are protected, rehabilitated, or improved.
- Projects shall be monitored to ensure that stipulations and specifications for soil and water protection achieve the desired results.
- Standard design features normally incorporated as needed into specific surface disturbing activity plans and authorizations include: scalping, saving, and respreading available top soil; regrading to natural contours; re-establishing appropriate stabilizing vegetation; and installing water erosion and runoff prevention measures, such as waterbars, benches, and drainage systems.
- Management activities in riparian areas will be designed to maintain or improve riparian values; roads and utility corridors will avoid riparian zones to the extent practical.

Owyhee Resource Management Plan

The *Owyhee RMP* (BLM 1999) contains the following objectives and management actions for soil-disturbing activities that may occur in the project area:

> **Objective:** Achieve stabilization of current, and prevent the potential for future, localized accelerated soil erosion problems (particularly on stream banks, roads, and trails; localized accelerated soil erosion is where humans, by their actions, are responsible for the site-specific erosive process).
>
> **Relevant Management Actions and Allocations:** 1) Review authorizations for site-specific surface-disturbing activities (e.g., road building, drill pad construction, utility lines) to ensure that approved BMPs are incorporated to reduce soil erosion and sediment yields to a minimum.2) Limit surface-disturbing activities on soils sensitive to compaction or that have a high soil erosion potential rating, or that are exhibiting existing accelerated erosion problems.

Southeastern Oregon Resource Management Plan

The *Southeastern Oregon RMP* (BLM 2002) contains the following BMPs for soil erosion protection:

> **Surface-Disturbing Activities:** 1) Special design and reclamation measures may be required to protect scenic and natural landscape values. This may include transplanting trees and shrubs, *mulching and fertilizing disturbed areas*, using low profile permanent facilities, and painting to minimize visual contrasts. Surface-disturbing activities may be moved to avoid sensitive areas or to reduce the visual effects of the proposal. 2) Reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the authorized officer. 3) Fill material should be pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds.

Rights-of-Way and Utility Corridors: 1) rights-of-way and utility corridors should use areas adjoining or adjacent to previously disturbed areas whenever possible, rather than traverse undisturbed communities. 2) Waterbars or dikes should be constructed on all of the rights-of-way and utility corridors, and across the full width of the disturbed area, as directed by the authorized officer. 3) Disturbed areas within road rights-of-way and utility corridors should be stabilized by vegetation practices designed to hold soil in place and minimize erosion. Vegetation cover should be reestablished to increase infiltration and provide additional protection from erosion. 4) Sediment barriers should be constructed when needed to slow runoff, allow deposition of sediment, and prevent transport from the site. Straining or filtration mechanisms may also be employed for the removal of sediment from runoff.

Wallowa-Whitman National Forest Land and Resource Management Plan

The *Wallowa-Whitman National Forest LRMP* (USFS 1990) includes the following standards and guidelines related to the LRMP's goal of maintaining or enhancing soil productivity:

- *Conflicts with Other Uses.* Give maintenance of soil productivity and stability priority over uses described or implied in all other management direction, standards, or guidelines.
- *Protection.* Give special consideration to scablands or other lands having shallow soils during Project analysis. Such analysis will especially consider the fragile nature of the soils involved and, as necessary, provide protection and other mitigation measures.

State

Most states, including Oregon, are authorized by the EPA to implement the stormwater NPDES permitting program. In Oregon, compliance with state requirements is necessary for stormwater management activities. The Oregon Department of Environmental Quality's (2010) Stormwater Program models its permits and requirements on the EPA program.

The Oregon EFSC provides for soil protection as part of its facility-siting standards and site-certificate application requirements. To issue a site certificate, the EFSC must find that the facility is not likely to result in a significant adverse impact on soils (OAR 345-022-0022). Exhibit I under OAR 345-021-0010(1)(i) outlines the EFSC application requirements related to soils.

The EPA remains the permitting authority in a few states (including Idaho) and territories and on most land owned by Native American tribes. For construction (and other land-disturbing activities) in areas where EPA is the permitting authority, operators must meet the requirements of the EPA (2012) Construction General Permit.

Minerals

Federal

On federal land, the BLM is the primary management agency for minerals. The BLM classifies mineral products as locatable, leasable, or salable. Locatable minerals include metallic minerals (gold, silver, lead, copper, zinc, nickel, etc.), nonmetallic minerals (fluorspar, mica, certain limestones, uranium, gypsum, clay, heavy minerals in placer form, and gemstones), and a variety of certain uncommon minerals. Mining of locatable minerals on public land is a right protected by the General Mining Law (Act) of 1872 (30 U.S.C. 22–42) and implementing regulations (43 CFR 3800–3870).

The BLM leases certain minerals, such as oil and gas, oil shale, geothermal resources, potash, sodium, native asphalt, solid and semi-solid bitumen, bituminous rock, phosphate, and coal, on public and other federal lands. The BLM also leases these minerals on certain private lands where the mineral rights are owned by the federal government. Most of the minerals leased under this program are used to make fertilizer and to feed livestock or are used for energy development. Leasable minerals are regulated by 43 CFR3000–3590.

Salable minerals include sand, gravel, soil, rock, and building stone used for common construction uses. The BLM sells mineral materials to the public at fair market value but gives them free to states, counties, or other government entities for public projects. Disposals of salable minerals from BLM-administered lands are regulated by 43 CFR 3600.

State

The Oregon Department of State Lands is responsible for managing, leasing, and selling state-owned mineral rights on approximately 3 million acres throughout Oregon. The Department’s authority derives from the Federal Surface Mining Control and Reclamation Act of 1977 (30 U.S.C.1234–1328) and from the Department’s rules (OAR 141-067).

The Idaho Department of Lands, through its State Board of Land Commissioners, administers mineral leases on approximately 3 million acres of state land, as well as on the beds of navigable waters, which were granted to the state in trust upon statehood in 1890. The state leases its minerals to generate revenue for the endowment fund for public purposes, such as public schools, or for the general fund when public trust lands are involved. The state issues leases for metals, other mineral commodities, oil and gas, and geothermal resources on land and in navigable waters. In Idaho, the EPA, Idaho Department of Environmental Quality, and Idaho Department of Lands administer federal and state programs to oversee environmental requirements for mining, including environmental permitting for mine operation and postmining reclamation.

Paleontological Resources

Federal

Federal protection for important paleontological resources applies on federally owned or managed lands. For the purposes of this EIS, “important paleontological resources,” also referred to as index fossils, are defined as all vertebrate fossils and invertebrate fossils of widespread distribution that provide age-dating information or are representative of specific geological formations. Federal legislative protection for paleontological resources began with the Antiquities Act of 1906 (16 U.S.C. 431 et seq.), which requires protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land. The Antiquities Act forbids disturbance of any object of antiquity on federal land without a permit issued by the responsible managing agency. This act also establishes criminal sanctions for unauthorized appropriation or destruction of antiquities.

In addition to the Antiquities Act, other federal statutes protect fossils. The Historic Sites Act (16 U.S.C. 461 et seq.) declares it national policy to preserve objects of historical significance for public use and gives the Secretary of the Interior broad powers to execute this policy, including criminal sanctions. The National Environmental Policy Act (42 U.S.C. 4321–4327) requires that important natural aspects of our national heritage be considered in assessing the environmental consequences of any Proposed Action. The Federal Land Policy and Management Act (43 U.S.C.1701–1782) requires that public lands be managed in a manner that protects the quality of their scientific values.

The most explicit protection for paleontological resources, the Paleontological Resources Preservation Act (16 U.S.C. 470aaa), regulates who may collect fossils on public lands and where such fossils must be curated. The BLM pamphlet *Fossils on Public Lands* explains that “vertebrate fossils may only be collected with a permit because of their relative rarity and scientific importance. They include not only bones and teeth, but also footprints, burrows, and other traces of activity. Vertebrate fossils are fragile and complex; and permit applicants must be able to show a sufficient level of training and experience in order to collect them. In addition, all vertebrate fossils collected under a permit must be held in an approved repository.” Management of paleontological resources on BLM land is governed by BLM Manual Section MS-8270 (BLM 1998a) and accompanying BLM Handbook 8270-1 (1998b). Handbook 8270-1 presents an area classification system for locations with varying fossil potential. This classification system has since been replaced by the Potential Fossil Yield (PFY) Classification system, as stipulated by BLM Instruction Memorandum 2008-009 (BLM 2007b), and is the classification system used in this environmental analysis.

BLM Instruction Memorandum 2009-011 (BLM 2008) provides guidance for assessing impacts on paleontological resources in order to determine applicable mitigation actions for cases in which significant paleontological resources will be adversely affected by a federal action.

BLM RMPs provide additional guidance on paleontological resources. The *Baker RMP* (1989) states the following:

> . . . paleontological localities will be protected through review of all surface-disturbing proposals. Collecting of important vertebrate fossils will be allowed subject to existing restrictions and permitting requirements. Commercial or hobby collection of common fossils will be allowed subject to existing federal regulations.
>
> A regional data review and evaluation of the importance of known paleontological resources will be completed. Inventories for paleontological resources will be conducted in connection with individual project proposals. Important paleontological localities will be patrolled periodically to detect unauthorized uses or determine threats to the resource. Evaluation and protection of paleontological resources will be accomplished through coordination with professional paleontologists and DOGAMI [Department of Geology and Mineral Industries]. Volunteers may be used to assist in monitoring and inventories.

> Localities containing vertebrate fossils, and resources that may provide important scientific information, will receive priority for protection and evaluation, in comparison to common invertebrate or common plant fossil localities which are not ordinarily the focus of protection measures.

The *Proposed Southeastern Oregon RMP and Final Environmental Impact Statement* (BLM 2001:121) describes paleontological resources as the fossilized remains of plants and animals. It further states the following:

> Fossils are of Pliocene, Miocene, and Pleistocene age and are located in various volcanic tuff, sandstone/siltstone beds or Pleistocene gravels. Of particular interest are vertebrate fossils such as those of extinct camels, mammoths, giant sloths, turtles, and horses.
>
> Fossil localities have been reported on public land in the planning area. Most of the finds have been exposed by wind or water erosion, and they are widely dispersed, situated primarily along maintained county or BLM roads. Several localities are the subject of ongoing academic research.

The RMP also states that for paleontological management, an interagency agreement is in effect between the BLM's Burns, Vale, and Prineville Districts and the John Day Fossil Beds National Monument. This agreement provides for an exchange of technical expertise and other services.

3.2.1.3 Issues Identified for Analysis

Geological Hazards

- Can the soils and geology sustain the construction and operation of the B2H Project?
- A seismic fault and geothermal resources occur in the area. The area is composed of steep canyons, hills, valleys, and mountains that often experience seismic instability. What are the hazards associated with those features?
- What are the hazards posed by rockslides and landslides?
- What would project effects be to cliffs and rock outcrops in the project area?

Soils

- Will removing vegetative cover cause soil erosion during spring runoff?
- What hazards are posed by soils that are highly erosive and unstable?
- Silt loam soil in some portions of the project area is highly wind erodible. What measures will be taken to prevent soil erosion by wind?
- What will be the project effects regarding soil compaction?

Minerals

- What would be the project effects on well sites and the injection field for the Neal Hot Springs Geothermal Project?

- What effects on highly mineralized areas of gold, silver, platinum, opals, diamonds, agates, and other valuable minerals found in Baker County are possible?
- What effect would the project have on mining claims in Owyhee County between Marsing and Murphy?
- Would the B2H Project restrict the ability to extract minerals?

Paleontological Resources

- Would the B2H Project violate the federal Paleontological Resources Preservation Act (16 U.S.C. 470aaa)?
- Would the project adversely affect petrified wood on Lindsey Mountain and in the Kitchen Creek Valley (Oregon)?
- Would the project damage fossils?

3.2.1.4 METHODOLOGY

The section describes the analysis area and study methods used to evaluate the existing conditions of geological hazards, soils, minerals, and paleontological resources and to analyze environmental impacts on each resource.

The general analysis area for characterizing soils, minerals, and paleontological resources extended 0.5 mile on each side of the centerline of the Proposed Action and alternatives. Where new roads or existing roads needing improvement fall outside the 0.5-mile-wide analysis area, analysis extended to 50 feet on each side of the centerline of the road. Substations, communication sites, staging areas, and fly yards outside the 0.5-mile-wide analysis area were also analyzed to a point 50 feet from the facility boundary. Larger analysis areas were identified for geological hazards, because these hazards can have extensive areas of effect.

GEOLOGICAL HAZARDS

EARTHQUAKES

The potentially affected area used for recorded historical earthquakes varies depending on earthquake magnitude. Using information from the seismology department at the University of Nevada at Reno as a guideline (Louie 1996), resource specialists established a 25-mile radius of potential effect for earthquakes less than magnitude 6.0, a 50-mile radius for earthquakes from magnitude 6.0 to less than 7.0, and a 100-mile radius for earthquakes of magnitude 7.0 or greater.

To characterize the risk of Quaternary faults, resource specialists defined the potential affected area as extending 25 miles on both sides from each known Quaternary fault line, which is a distance of effects similarly observed for historical earthquakes less than magnitude 6.0. Given the length of time between movements on Quaternary faults and the comparatively short life of the proposed B2H Project (estimated to be 50 years), a 25-mile distance provided for sufficient hazard analysis in this Draft EIS.

The historical earthquake epicenters were mapped in relation to the analysis area (by county), and a percentage of the analysis area likely to be affected by earthquakes was calculated for the Proposed

Action and alternatives. Quaternary faults within 25 miles of the Proposed Action and alternative routes were also identified.

The U.S. Department of Transportation's Office of Pipeline Safety (OPS) provides earthquake hazard rankings for the United States. Based on information from the U.S. Geological Survey's National Earthquake Hazards Reduction Program, the OPS assigned earthquake hazard rankings from zero to 100 for all parts of the country, where zero represents the lowest earthquake hazard and 100 represents the highest. Rankings less than 70 are classified as a low risk for earthquake damage, rankings from 70 to 85 are a medium risk, and rankings from 85 to 100 are a high risk. The earthquake hazard rankings for the B2H Project analysis were applied to the Proposed Action and alternatives, based on the length of the routes located within each hazard classification.

Landslides

This environmental analysis considered two landslide databases. The hazard rankings from each database were used to determine the percentage of the analysis area (by county) prone to landslides. The 1996 OPS report prepared by the Federal Emergency Management Agency provides information from the U.S. Geological Survey and the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) for locations of swelling clay, landslide incidence, landslide susceptibility, and land subsidence. Based on those four factors, landslide hazard rankings from zero to 100 are assigned, with zero representing the lowest ground-failure hazard and 100 representing the highest. Landslide hazard rankings between 85 and 100 are classified as a high risk for landslides, rankings between 70 and 85 are a medium risk, and areas less than 70 are a low risk. Soil instability features in the Oregon Statewide Landslide Information Database (SLIDO-2) (Department of Geology and Mineral Industries [DOGAMI] 2011b) were also evaluated to estimate the percentage of the analysis area (by county) for each unstable feature.

Subsidence

Subsidence, which is defined as the vertical collapse of the ground surface, can occur where land surface overlies natural underground voids such as karst (sinkhole) topography or caves. Subsidence can also occur where land surface overlies underground voids that result from the removal of solid or liquid mineral resources; overlying land that is not adequately supported in such resource extraction areas can collapse. A review of the geology within several miles of the Proposed Action and alternatives showed that the area does not contain either natural subsidence or locations containing large-scale mineral extraction. Therefore, subsidence is not considered a geological hazard to the project and therefore is not discussed further in this Draft EIS.

Volcanoes

The analysis area for characterizing the risk from active volcanoes to the transmission line extended 100 miles on each side of the Proposed Action and each alternative. Although volcanic ash could travel 100 miles, the thick clouds of ash and gases necessary to cause shorting of transmission lines, or weight damage, would likely be dispersed at 100 miles from all but the largest volcanoes (Scott et al.

1995). There are no active volcanoes located within 100 miles of the Proposed Action or alternatives; therefore, volcanoes are not discussed further in this Draft EIS.

SOILS

The NRCS Soil Data Viewer (NRCS 2010) database provides soil data on a wide range of characteristics. A review of the NRCS data identified soil factors that could cause increased soil erosion or soil compaction or lead to difficulty in reestablishing vegetation as part of project reclamation. Resource specialists used the following factors to evaluate project soil conditions.

WIND ERODIBILITY

The analysis area was overlaid on the NRCS geographic information system (GIS) wind erosion data to characterize existing soil conditions related to wind erodibility. Soils in Groups 1 through 4 (wind erosion potential of greater than or equal to86 tons/acre/year) are considered highly wind erodible. Areas with highly wind-erodible soils are expressed as a percentage of the total analysis area by county.

EROSION POTENTIAL

The analysis area was overlaid on the NRCS GIS data for *K*-factor groups to characterize existing soil conditions related to erosion potential. *K*-factor values range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by rainfall. Soils with a *K* factor of 0.37 have a higher potential for erosion. Areas with high *K*-factor soils are expressed as a percentage of the total analysis area by county.

STEEP SLOPES

The analysis area was overlaid on the NRCS GIS slope data to identify areas with steep slopes. This analysis defined steepness as a 25 percent or greater incline. Areas with steep slopes are expressed as a percentage of the total analysis area by county.

SOIL T FACTOR

To identify areas with low soil-loss tolerance, the analysis area was overlaid on the NRCS *T*-factor GIS data. *T* factor is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. *T*-factor values range from 1 to 5 tons/acre/year and are based on depth of soil to bedrock and the type of bedrock. The *T* factor is not used for construction site erosion (Oregon Department of Environmental Quality 2005: Appendix B). Areas with low *T*-factor soils are expressed as a percentage of the total analysis area by county.

COMPACTED SOIL

Areas with highly compacted soil were identified by overlaying the analysis area on the NRCS GIS data that shows clay loam or finer soil texture and data that shows soils with moderately to highly poor drainage characteristics. Soils meeting both the texture and drainage characteristics are defined as highly compactable. Areas of highly compactable soil are expressed as a percentage of the total analysis area by county.

Stony-Rocky Soil

Stony-rocky soil contains a high percentage of coarse soil fragments, such as sand and gravel. Stony-rocky soil does not retain moisture as well as fine-grained soil and is poor in providing soil nutrients to new or established vegetation. Areas with stony-rocky soil were identified by overlaying the analysis area on the NRCS GIS data for soil containing greater than 5 percent by weight soil particles greater than 3 inches. The proportion of stony-rocky soil is expressed as a percentage of the total analysis area by county.

Droughty Soil

Soil is considered droughty if it is unable to store enough water to meet plant requirements. Sandy and gravelly soils are droughty because they have low water-holding capacities. Droughty soil is coarse textured (sandy loam or coarser) and excessively well drained. Areas with droughty soil were identified by overlaying the analysis area on the NRCS GIS data for soil classified as moderately to excessively well-drained sandy loam or coarser texture. The proportion of droughty soil is expressed as a percentage of the total analysis area (by county).

Minerals

The analysis area for mineral resources is 0.5 mile on each side of the Proposed Action and alternative centerlines and 50 feet on each side of the centerline of project roads outside the 1-mile-wide transmission line analysis area. Data for mineral resources, including spatial information, were obtained from BLM sources. BLM’s LR-2000 database (http://www.blm.gov/lr2000) was also reviewed. The BLM data was queried for the percentage of analysis area containing mineral resources, including mining claims and mining leases (mineral products not typically specified), and mineral-product-specific data for mineral materials (sand, gravel, specialty stone), oil and gas wells and leases, and geothermal leases. The analysis area was overlaid on the BLM mining data and the area was determined and expressed as a percentage of the analysis area by county. The areas containing mineral claims, leases, or salable mineral permits were identified along the centerlines of the Proposed Action and alternatives. BLM’s LR-2000 database was also checked for individual mining claims to see whether the mineral product could be identified.

The Oregon Department of Transportation provided information on the locations of six active state quarry and stockpile sites that are within the analysis area.

For active oil and gas wells, the centerlines of the Proposed Action and alternatives were overlaid on the BLM-supplied data on wells within the analysis area. To compare the number of wells by county, the number of wells was counted for the Proposed Action and each alternative.

Aerial photographs and U.S. Geological Survey topographic maps of the Proposed Action and alternatives were also reviewed. Mining-related features were noted within 1,000 feet on each side of the centerlines of the Proposed Action and alternatives. The mining features are described according to route milepost and the number of feet (in distance) perpendicular to the centerline.

PALEONTOLOGICAL RESOURCES

For this Draft EIS, paleontological analysis is based on interviews with BLM Oregon and state paleontologists and on reviews of paleontological information at BLM Vale and Baker City Field Offices (Pritchard 2011). To complete the paleontology analysis, the Proposed Action and alternatives were plotted on geological maps to calculate route distances across each geological unit. Table B.1-2 in Appendix B.1 presents the results of the map analysis.

3.2.1.5 AFFECTED ENVIRONMENT

This section describes the affected environment for the B2H Project as a whole. To the extent there are aspects of the affected environment that are distinct among the project segments and alternatives, those are described in the environmental consequences discussions.

GEOLOGICAL HAZARDS

EARTHQUAKES

Historical earthquake data for Oregon was obtained from the Oregon Department of Geology and Mineral Industries (DOGAMI) (2011a), and historical earthquake data for Idaho was obtained from Idaho Geological Survey (2011). The Proposed Action and alternatives would be located in areas where earthquakes could occur. Figure 3-2 shows the historical earthquake epicenters and Quaternary faults within 25 miles of the centerline of the Proposed Action and alternatives. In this section, the term “analysis area” is used to describe the area within 25 miles on either side of the Proposed Action or alternative centerlines. The Quaternary period includes the past 2.6 million years of geological time. Of the Quaternary faults identified by the U.S. Geological Survey, faults and fault zone segments less than 15,000 years old are fairly recent by geological standards and likely pose the greatest potential for future earthquakes. These faults are considered active.

Quaternary fault analysis identifies several fault systems with movement over long geological time periods, suggesting that future movement is possible. On active faults in Union County, the East Grande Ronde Valley fault system has been active in the last 15,000 years, with other movement dating to 1.6 million years ago. Portions of the West Grande Ronde Valley fault system are active but also contain evidence of movement 130,000 years ago. The Halfway-Posey Valley Section of the Pine Mountain Graben fault system in Baker County (Oregon) is active, with additional movement approximately 750,000 years before present. The Powder River Peninsula fault system in Baker County and in Washington County (Idaho) is considered active. Malheur County (Oregon) contains the active Cottonwood Mountain Fault and the Juniper Mountain Fault, both of which have had movement within the past 15,000 years. Lastly, the Rush Peak fault zone in Washington County contains recent movement, as well as movement dating to 1.6 million years ago.

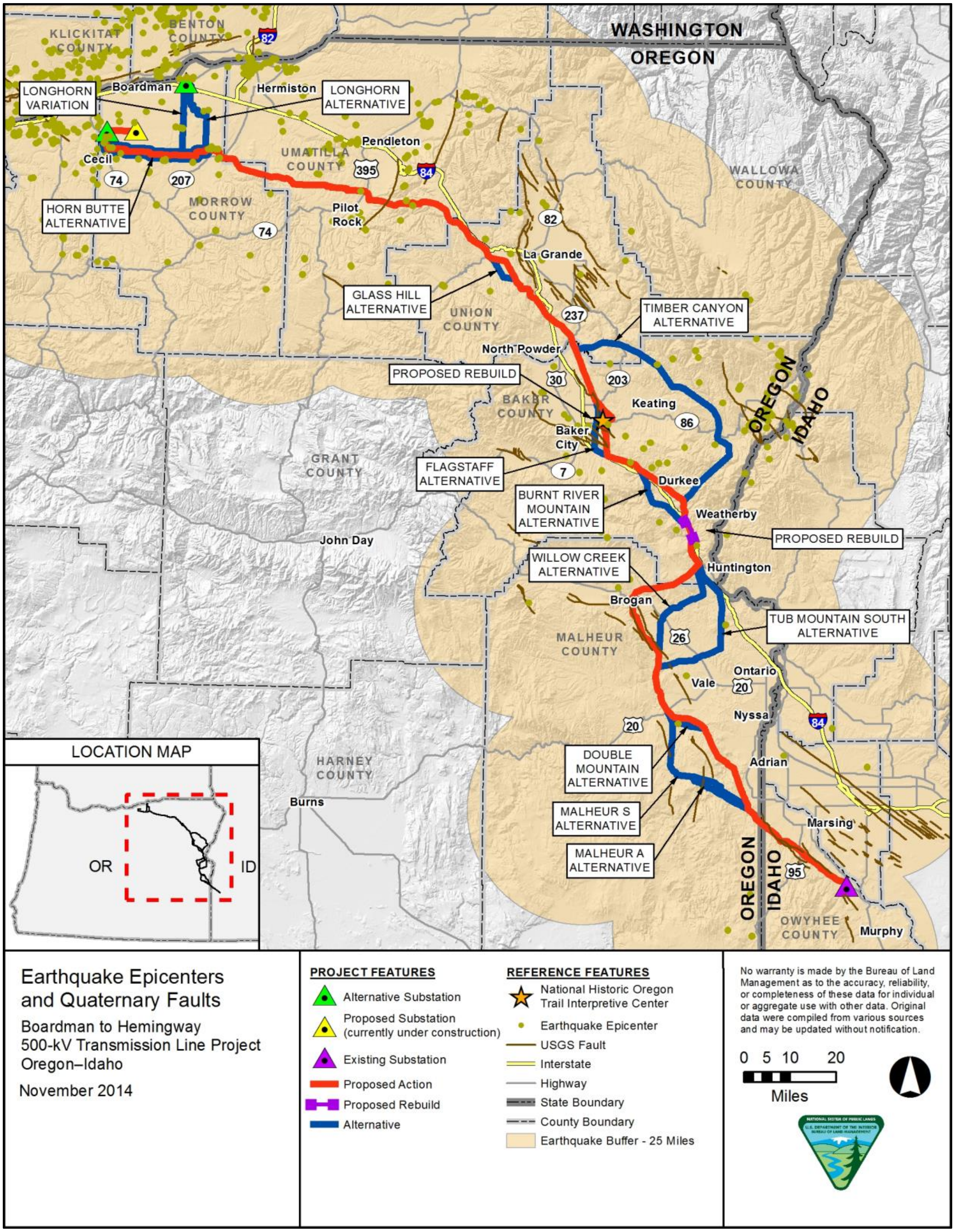

Figure 3-2. Earthquake Epicenters and Quaternary Faults

Earthquake hazard ratings are based on historical earthquake magnitudes and locations, ranging from zero (no earthquake hazard) to 100 (highest earthquake hazard). A high earthquake hazard risk is assigned to areas with earthquake hazard rankings exceeding 85. Locations with earthquake hazard rankings between 70 and 85 are considered medium risk, and rankings less than 70 are considered low risk.

Table 3-1 presents the percentage of the analysis area that is ranked low, medium, and high risk for earthquakes in each county. None of the analysis areas for the Proposed Action or any of the alternatives are ranked high for earthquake risk. The earthquake risk is greatest in Umatilla County with 13 percent of the analysis area in Umatilla County rated as medium earthquake risk. The 1996 data from the U.S. Department of Transportation's OPS indicates that the remainder of the Proposed Action has a low risk for earthquakes.

Table 3-1. Percentage of Analysis Area by County in Each Earthquake Hazard Risk Category

County	Low Risk (<70)	Medium Risk (70–85)	High Risk (85–100)
Morrow (Oregon)	100.0	0.0	0.0
Umatilla(Oregon)	87.2	12.8	0.0
Union(Oregon)	100.0	0.0	0.0
Baker(Oregon)	100.0	0.0	0.0
Malheur (Oregon)	100.0	0.0	0.0
Owyhee (Idaho)	100.0	0.0	0.0

LANDSLIDES

Landslides, including mudflows, mudslides, rock flows, rockslides, and debris flows, could occur in the analysis area. Landslides are often triggered by other natural events, including earthquakes, or precipitation sufficient to cause earth movements. Figure 3-3 shows the landslide hazard zones and the instabilities, mapped by Oregon's DOGAMI, in the B2H Project area in Oregon. In this section, the term "analysis area" is used to describe the area within 25 miles on either side of the Proposed Action or the alternative centerlines.

Table 3-2 presents the percentage of the analysis area that is ranked low, medium, and high risk for landslides in each county. There is a low risk of landslides in 99 percent of the analysis area; however, 5 percent of the analysis area in Union County and 2 percent in Baker County have high landslide risk, and 1 percent of the analysis area in Baker County has a medium landslide risk.

Table 3-2. Percentage of Analysis Area by County in Each Landslide Risk Category

County	Low Risk (0 to 69)	Medium Risk (70–85)	High Risk (85–100)
Morrow (Oregon)	100	0	0
Umatilla (Oregon)	100	0	0
Union (Oregon)	95	0	5
Baker (Oregon)	99	1	0
Malheur (Oregon)	98	0	2
Owyhee (Idaho)	100	0	0

Table 3-3 shows the percentage of the analysis area containing unstable landforms as identified in the DOGAMI's Statewide Landslide Information Database (SLIDO-2) (2011b). Twelve percent of the Morrow county analysis area is located on alluvial fan deposits. Less than five percent of the analysis areas in Union, Baker, and Malheur Counties are located on landslides. The analysis areas in these counties also contain two percent or less of talus/colluvium. SLIDO-2 did not identify any unstable landforms in Umatilla County, and the database does not extend to Owyhee County in Idaho.

Table 3-3. Percentage of Analysis Area by County with Mapped Landform Instabilities

County	Alluvial Fan	Landslide	Talus/Colluvium
Morrow (Oregon)	11.8	0.0	0.0
Umatilla (Oregon)	0.0	0.0	0.0
Union (Oregon)	0.0	4.8	0.1
Baker (Oregon)	0.3	2.0	2.1
Malheur (Oregon)	0.0	2.0	0.1
Owyhee (Idaho)	0.0	0.0	0.0

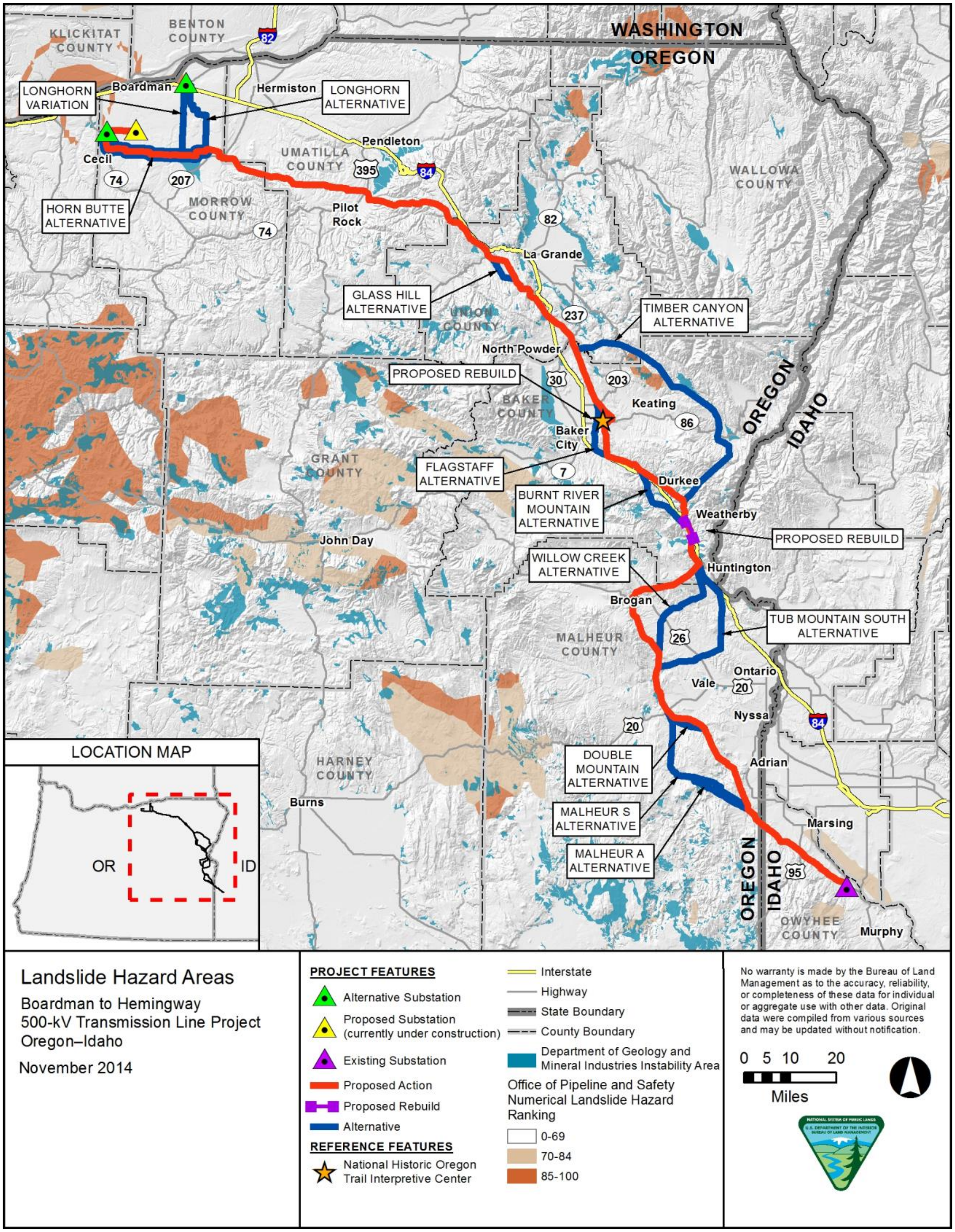

Figure 3-3. Landslide Hazard Areas

SOILS

The analysis area for soils extends one-half mile on either side of the Proposed Action and alternative centerlines; 50 feet on either side of the centerlines of new and existing roads; and 50 feet from the boundaries of substations, communications sites, staging areas and fly yards that fall outside the mile-wide analysis area for the transmission lines.

The Proposed Action and alternatives cross several major soil orders as shown in Figure 3-4. The analysis area—which includes the Grassland, Horn Butte, and Longhorn Substations; Morrow County; and the Owyhee Uplands and Snake River Plain in southwestern Idaho and southeastern Oregon—consists of soils of the Aridisol order. Aridisols are found in dry climates and contain subsurface horizons in which clay, calcium carbonate, silica, salts, and/or gypsum have accumulated. They are usually not suitable for agriculture unless irrigation water is provided. Revegetation in these areas may be more difficult due to a lack of water.

In Umatilla, Union, and Baker Counties, the soils consist primarily of Mollisols. The Mollisol order includes a variety of soils formed mainly under grasslands; it is the predominant order in northeastern Oregon. These soils have a strong organic component formed by the decomposition of grass and other vegetation, which results in very productive soils.

Some areas of northeastern Oregon contain soils of the Andisol order. The order Andisol is represented by a variety of soils with a predominantly volcanic or volcaniclastic origin. In the analysis area, the Andisols are predominantly found under coniferous forest vegetation within the Blue Mountains. However, Andisols are sometimes cleared of forest and used for agriculture.

ERODIBLE SOILS

A soil's potential to erode is measured by its *K* factor. The *K* factor also measures the soil's rate of runoff when compared to a "standard" condition. The *K* factor is used in the Universal Soil Loss equation and represents a relative index of susceptibility of bare, cultivated soil to particle detachment and transport by rainfall. The U.S. Department of Energy (DOE), Pacific Northwest National Laboratory online guideline (DOE 2003) identifies low, moderate, and high *K* factor values. Higher *K* factor values indicate higher susceptibility to erosion. Low *K* values range from 0.05 to 0.15, moderate *K* values range from 0.25 to 0.4, and high *K* values exceed 0.4. Because the highest *K* value in the NRCS GIS data file was 0.37, that value rather than 0.4 was used as the high *K* value threshold in this EIS.

The NRCS data for wind erodibility groups were reviewed for the analysis area. Soils in Groups 1 through 4 (greater than or equal to 86 tons per acre per year) were considered highly wind erodible. Highly wind erodible soils were expressed as a percentage of the total analysis area by county. The construction and operations disturbance areas were also reviewed to assess the acres of highly wind erodible soil for the Proposed Action and the feasible alternatives.

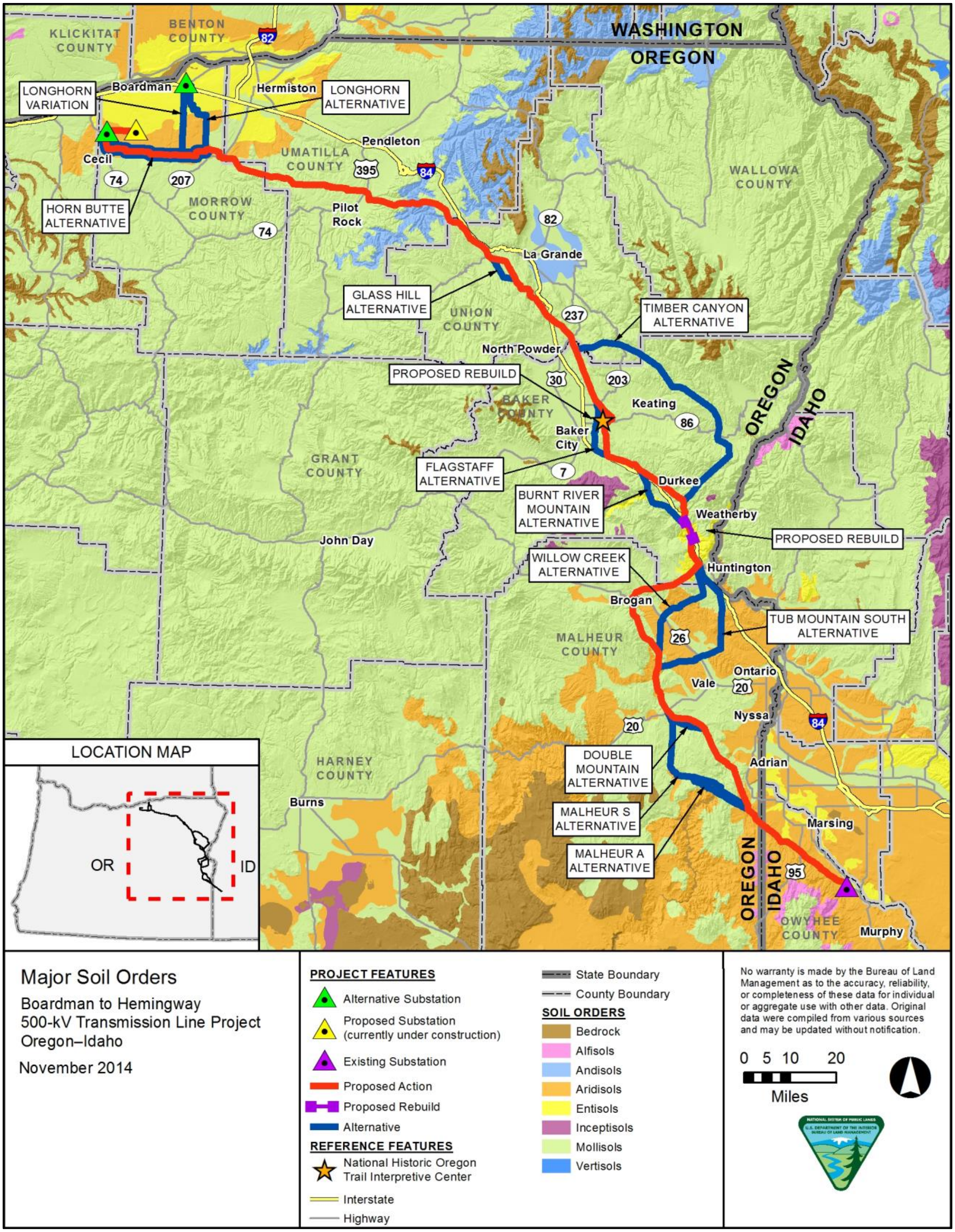

Figure 3-4. Major Soil Orders

To identify areas with steep slopes, a slope inclination of 25 percent or greater was selected. The analysis area was overlaid on the NRCS GIS data file and the area with steep slopes (in acres) was determined. For impact assessment, the acres with steep slopes were identified within the construction and operations disturbance areas of the Proposed Action and alternatives.

Table 3-4 shows the areas of increased soil erosion potential within the analysis area as evaluated by the percentage of soils that are highly wind erodible, that have a high *K* factor, and that have slopes exceeding 25 percent.

Table 3-4. Percentage of Analysis Area by County with Increased Soil Erosion Potential

County	Highly Wind-Erodible Soils	High *K* Factor Soils	Slopes Greater Than 25%
Morrow (Oregon)	72	71	0
Umatilla (Oregon)	1	88	6
Union (Oregon)	0	73	0
Baker (Oregon)	1	33	43
Malheur (Oregon)	26	37	6
Owyhee (Idaho)	9	0	0

Sensitive Soils

The soil *T* factor is an indicator of soil-loss tolerance, or the amount of soil loss that can be tolerated for a soil to remain productive. The *T* factor of the Universal Soil Loss equation is the maximum rate of annual soil loss that will permit crop productivity to be sustained economically and indefinitely on a given soil.

Soils with a low *T* factor are more sensitive to the effects of erosion than soils with a higher *T* factor. The USFS *Soil Management Handbook* (FSH 2509.18-91) presents an example threshold soil-loss tolerance of 2 tons per acre per year for deep soils, or 1 ton per acre per year for shallow soils; however, it indicates that actual soil-loss tolerance standards may vary. This Draft EIS uses the USFS soil-loss tolerance of 2 tons per acre per year as a guideline. Table 3-5 presents sensitive soils as a percentage of the analysis area.

Soil with a low *T* factor is more prevalent in Union, Baker, Umatilla, and Malheur Counties (ranging from 47 to 68 percent) than in Morrow County (9 percent) and Owyhee County (29 percent).

The NRCS defines arable land as land suitable for farming. A total of 49 percent of the analysis area is located on arable land. Morrow and Umatilla Counties have the highest percentage of arable land, with 95 percent and 80 percent, respectively. A total of 61 percent of the analysis area in Union and Baker Counties is located on arable land. Owyhee County (3 percent) and Malheur County (3 percent) analysis areas contain relatively small percentages of arable land.

Table 3-5. Percentage of Analysis Area by County with Sensitive Soils

County	Low *T* Factor	Arable Land
Morrow (Oregon)	9.0	95.2
Umatilla (Oregon)	65.3	80.0
Union (Oregon)	46.8	61.2
Baker (Oregon)	56.4	59.9
Malheur (Oregon)	67.9	2.9
Owyhee (Idaho)	29.3	2.7

Reclamation Potential of Soils

Table 3-6 summarizes the reclamation potential of soil in the analysis area as defined by three soil characteristics: highly compaction prone, stony-rocky, and droughty.

Although all soil is susceptible to compaction to varying degrees, wet soil is more readily compacted than dry, and clay loam or finer soil with poor drainage characteristics is assumed to be more highly compaction prone. A review of the NRCS soil data indicates that highly compaction-prone soil is absent over the entire route, and so is not discussed further in this Draft EIS.

Table 3-6. Percentage of Analysis Area by County with Soil Reclamation Potential

County	Highly Compaction Prone	Stony-Rocky	Droughty
Morrow (Oregon)	0	11	83
Umatilla (Oregon)	0	33	34
Union (Oregon)	0	88	88
Baker (Oregon)	0	76	95
Malheur (Oregon)	0	62	79
Owyhee (Idaho)	0	25	33

The presence of stony or rocky soil could interfere with agricultural practices and complicate revegetation efforts. About 58 percent of the total analysis area is located on stony-rocky soil. The highest amounts of stony-rocky soil are in Union County (88 percent), Baker County (76 percent), and Malheur County (62 percent), while the lowest amounts occur in Umatilla County (33 percent), Owyhee County (25 percent), and Morrow County (11 percent).

Approximately 79 percent of the analysis area is overlain by droughty soil. Droughty soil dominates the landscape in Baker County (95 percent), Union County (88 percent), Malheur County (79 percent), and Morrow County (83 percent). Droughty soil is less prevalent in the analysis areas in Owyhee and Umatilla Counties (34 percent for each).

MINERALS

Data for mineral resources, including spatial information, were obtained from BLM sources. BLM's LR-2000 database (http://www.blm.gov/lr2000) was also reviewed.

The B2H Project analysis area includes a variety of potential mineral assets, including salable minerals (sand, gravel, building stones, etc.), locatable minerals (gold, silver, copper, mercury, etc.), industrial minerals, and semiprecious gemstones (jasper, opal, agate, etc.). Morrow, Umatilla, and Malheur Counties each contain active oil and gas leases. Baker County has a rich history of placer and lode-type gold and similar locatable mineral deposits, as do the Owyhee Mountains of southwestern Idaho and southeastern Oregon. Much of the general project vicinity also has favorable conditions for geothermal development, and one active geothermal lease is under development in Malheur County within 1 mile of the Proposed Action. Recent exploration in the vicinity of Payette, Idaho, and Ontario, Oregon, suggests that land within the analysis area may also hold reserves of oil and natural gas. Salable minerals—including sand and gravel, building stones, and the like—are found throughout the analysis area.

Table 3-7 represents the mineral resources within the analysis area. Malheur County contains the greatest amount of mineral resources within the analysis area, including two active oil and gas wells. A total of 25 percent of the land within the analysis area in Malheur County is leased for oil and gas, and 19 percent of the land in the analysis area of the county has current mining claims. While there are a number of mining claims in the analysis area, a relatively small number of claims in the analysis area are currently being mined. Table B.1-1 in Appendix B.1 summarizes the active mining activities within 1,000 feet of the Proposed Action and alternatives, as observed from aerial reconnaissance photographs and topographic maps.

Table 3-7. Mineral Resources in Analysis Area by County and Ownership

County	Ownership	Number of Active Oil and Gas Wells	Oil and Gas Leases (acres)	Mining Claims (acres)	Geothermal Leases (acres)	Mineral Material Disposal (acres)
Morrow (Oregon)	Private	0	1,062.1	0	0	0
Umatilla (Oregon)	BLM	0	0	0	0	0
Union (Oregon)	USFS	0	0	211.3	0	0
Baker(Oregon)	BLM	0	0	1,466.5	0	0
Baker(Oregon)	Private	0	0	214.7	0	0
Baker(Oregon)	USFS	0	0	522.3	0	0
Malheur (Oregon)	BLM	1	2,8171.8	6,389.9	3,353.3	88.3
Malheur (Oregon)	Bureau of Reclamation	0	245.3	0	0	0
Malheur (Oregon)	Private	1	4,913.8	195.7	0	0
Owyhee(Idaho)	BLM	0	0	1,155.8	0	2
Owyhee(Idaho)	Bureau of Reclamation	0	0	2.1	0	0

Mineral material disposal properties are located in Malheur and Owyhee Counties. Mineral products include tufa and specialty stone. Mineral resources in other portions of the analysis area are much less prevalent. The production status of the two identified oil and gas wells is unknown.

PALEONTOLOGICAL RESOURCES

The analysis area for paleontological resources extends one half mile on either side of the centerlines of the Proposed Action and alternatives and within 50 feet of project roads and other facilities. The BLM uses its PFY Classification system (BLM 2007b) to classify geological units according to their fossil potential. The five PFY class levels include:

- Class 1 (very low): not likely that a geological unit has recognizable fossil remains
- Class 2 (low): not likely to contain vertebrate fossils or scientifically significant invertebrate fossils
- Class 3 (moderate or unknown): various significance, abundance, and predictable occurrence or unknown fossil potential
- Class 4 (high): high occurrence of significant fossils
- Class 5 (very high): highly fossiliferous and predictable or significant fossils that are at risk of adverse impacts or degradation

The PFY system further divides Classes 3, 4, and 5 into “a” and “b” categories. Class 3a is defined by bedrock units with moderate potential for vertebrate fossils or scientifically important invertebrate fossils, while Class 3b is applied to rock units with unknown fossil potential. Classes 4a and 5a apply to rock units with little or no soil or vegetative cover. Fossils in rocks lacking soil or vegetative cover are most susceptible to natural degradation or human-caused damage or collection loss. Classes 4b and 5b apply to bedrock with lower potential for natural or human-caused fossil disturbance because of several factors, including protective soil or vegetative cover.

The BLM Idaho PFY classifications for bedrock units within 0.5 mile or beneath the Proposed Action in Idaho are shown in Table 3-8. The Idaho Group bedrock units in Owyhee County, Idaho, have similar fossil potential to the Idaho Group bedrock in Baker and Malheur Counties, Oregon (Halford 2011; Breithaupt 2011). The project crosses the Poison Creek Formation of the Idaho Group in several places. The Poison Creek Formation has been identified as highly fossiliferous. This formation has yielded the fossils or fossil fragments of several fish species; turtles; mammals, including rabbit, small carnivores, rhinoceros, small and large camel, horse, and sloth; and over 50 species of plants (BLM 2007c).

A review of paleontological features in eastern Oregon indicates that whole and partial fossils have been discovered in the sedimentary rocks from the Miocene, Pliocene, and Pleistocene periods. In the northern portion of the analysis area, the Alkali Canyon and McKay Formations of the Dalles Group are fossiliferous late Miocene to Pliocene sedimentary units often interbedded with basalt (Farooqui et al. 1981). Surface surveys or shallow hand excavations in these units have yielded whole or fragments of fossil mammals, including canines, rodents, and herbivores. Farther south in Baker and Malheur

Counties, widely distributed Miocene and Pleistocene sedimentary rocks associated with the Idaho Group are also documented to have a large variety of fossil resources. Fossil evidence includes a variety of plants, insects, turtles, canines, rodents, squirrels, beavers, rhinoceroses, small carnivores, camels, deer, peccaries, mastodons, and mammoths. Shotwell (1970) reported finds of up to 36 different mammal species within sedimentary beds in southeastern Oregon. Additionally, Jason McClaughry (2011), field geologist for the Oregon DOGAMI Baker City office, indicated that mammal fossils have been recently discovered in surface alluvial sediments near the La Grande airport.

Table 3-8. BLM Idaho Potential Fossil Yield Classifications

Bedrock Formation Name	Potential Fossil Yield Class
Melon gravel	3a
Unnamed Pleistocene deposits	3a
Black Mesa gravel	3a
Bruneau Formation	4a
Glenns Ferry Formation	5a
Chalk Hills Formation	5a
Miocene sediments of the Boise Front	4a
Sedimentary interbeds of southern Owyhee County volcanic	4a
Poison Creek Formation	5a
Payette Formation	4a
Sucker Creek Formation	5a
Challis volcanics	3a

BLM Oregon has not designated PFY values for Oregon bedrock units (Zancanella 2011). Therefore, PFY values for the Oregon bedrock units and Idaho rocks not appearing on the BLM list have been estimated. A number of factors were used to provide the estimates. For instance, very low (Class 1) to low (Class 2) classifications were assumed for igneous rocks. The Miocene-Pliocene sedimentary rocks in Oregon were classified as high (Class 4) or very high (Class 5). These included most of the sedimentary rocks in Baker and Malheur Counties and Dalles Group rocks (McKay and Alkali Canyon Formations) in Umatilla and Morrow Counties. These sediments are of similar age and depositional environments to the Idaho bedrock formations (Bruneau, Glenns Ferry, Chalk Hills, etc.) that BLM Idaho rated as high to very high. Other bedrock with unknown fossil potential was classified as Class 3 (moderate or unknown potential).

BLM Oregon provided a paleontology report for the Sunstone Pipeline project, originally planned to pass through Malheur, Baker, Union, and Umatilla Counties (Uinta Paleontological Associates 2010). The report also provided estimates of PFY. A comparison of the Sunstone Pipeline PFY and the preliminary Oregon PFY estimates identified a good correlation. In general, the Holocene and Pleistocene sediments in both reports received a Class 3, and Miocene-Pliocene units received Class 3, 4, or 5 designations. The paleontological review also included interviews with BLM Oregon and state paleontologists and visits to the BLM Vale and Baker City Field Offices to meet staff with paleontology oversight and to review paleontological information (Pritchard 2011).

BLM PFY values and assumed fossil sensitivity by formation, county, and alternative are presented in Table B.1-2 and Table B.1-3 in Appendix B.1. The miles of formations with high or very high estimated PFY in the analysis area are identified in Table 3-9.

Table 3-9. Oregon High or Very High Potential Fossil Yield Estimates

Formation (County, State) [1]	Total Miles	Potential Fossil Yield
Proposed Action		
Alkali Canyon Formation (Morrow County, Oregon)	8.05	5
Alkali Canyon Formation (Umatilla County, Oregon)	0.75	5
McKay Formation (Umatilla County, Oregon)	2.4	5
Tuffaceous sedimentary rocks (Baker County, Oregon)	7.05	4
Lake and stream deposits (Baker County, Oregon)	7.47	4
Tuffaceous lake and stream deposits (Baker County, Oregon)	1.13	4
Tuffaceous lake and stream deposits (Malheur County, Oregon)	0.82	4
Tuffaceous sedimentary rocks (Malheur County, Oregon)	13.57	4
Lacustrine sediments (Malheur County, Oregon)	12.84	5
Lower tuffaceous sedimentary rocks (Malheur County, Oregon)	0.66	4
Poison Creek Formation (Owyhee County, Idaho)	9.56	5a
Sand and mudstone of stream and lake sediments (Owyhee County, Idaho)	2.82	4
lder gravels and associated clastic materials from southern sources (Owyhee County, Idaho)	1.99	4
Proposed 138/69-kV Rebuild		
Tuffaceous lake and stream deposits (Baker County, Oregon)	0.17	4
Project Total	69.28	

Table Note: [1] No applicable formations with high or very high potential fossil yields in Union County, Oregon.

3.2.1.6 Environmental Consequences

Criteria for Assessing Intensity of Impacts

Geological Hazards

For earthquakes and landslides, the risks of damage to project infrastructure and the risk of destabilizing through construction and blasting are ranked high, moderate and low based on the agency designations described in the methodology section.

Soils

For soils, the intensity of direct and indirect impacts is defined in Table 3-10.

Table 3-10. Criteria for Assessing Intensity of Impacts on Soils Resources

Intensity of Impacts	Description
High	• Long-term disturbance of land surface where soils exhibit high susceptibility to erosion by water or wind
Moderate	• Short-term disturbance of land surface where soils exhibit high susceptibility to erosion by water or wind • Short- and long-term disturbance of land surface where soils have low reclamation potential
Low	• Long-term disturbance of land surface where soils exhibit low susceptibility to erosion by water or wind • Short-term disturbance of land surface where soils exhibit moderate to low susceptibility to erosion by water or wind

Minerals and Paleontological Resources

For minerals and paleontology, the intensity of direct and indirect impacts is defined in Table 3-11.

Table 3-11. Criteria for Assessing Intensity of Impacts on Mineral and Paleontological Resources

Intensity of Impacts	Description
High	• Long-term project activities that restrict access to mineral claims and leases • Damage to paleontological specimens and loss of associated data
Moderate	• Short-term project activities that restrict access to mineral claims and leases • Ground-disturbing activities in areas of high potential fossil yield
Low	• Project activities that affect but do not restrict operations on mineral claims and leases • Long-term indirect effects of increased access that could allow for unauthorized collection or destruction of paleontological specimens

NO ACTION ALTERNATIVE

If the B2H Project is not authorized, there would be no adverse effects on soil in the project area, nor any adverse effects on mineral exploration and production. There would likewise be no adverse direct or indirect effects on paleontological resources.

EFFECTS COMMON TO ALL ALTERNATIVES

Effects to earth resources are described projectwide for the Proposed Action and alternatives because the differences in effects among the alternatives and project segments are small. To the extent notable differences exist, they are described in the summary of effects discussions for each resource. Tables showing relevant earth resources information for the Proposed Action and the alternatives are provided. For each alternative, the information for the section of the Proposed Action that is equivalent to the alternative is presented, then the information for the alternative is presented to facilitate comparison of each alternative with the section of the Proposed Action it would replace.

GEOLOGICAL HAZARDS

The risk posed by geological hazards in the B2H Project area is relatively similar for the Proposed Action and the alternatives. For landslide risk, there are local conditions that pose a somewhat higher risk but do not affect the risk category. Effects for geological hazards are described for the entire B2H Project area in this section.

Earthquakes

Ground shaking and displacement related to earthquakes may damage human-made structures, including transmission lines and substations, which could result in interruption of power and injury to those in the vicinity of the structural damage. The damage to structures caused by earthquakes is highly variable and based on many features including but not limited to types of building materials, quality of construction, distance from the epicenter, earthquake magnitude, and the susceptibility of underlying rock and soil at the site to ground shaking. Therefore, the relationship between the potential for structural damage and distance from earthquake epicenter is only an estimate. However, certain areas are subject to more earthquakes than others and the geographic distribution of earthquakes was considered. Table 3-1 represents the relative risk of earthquake damage to the proposed B2H Project structures in each county, based on the OPS (1996) earthquake risk category rating system.

A total of 83 percent of the Proposed Action and alternatives would be located in areas of low risk of earthquake damage, and 17 percent would be located in areas of moderate risk. None of the proposed infrastructure would be located in areas of high earthquake risk.

Landslides

Construction of transmission lines and associated facilities could negatively affect, and be negatively affected by, landslides. Blasting operations, particularly in areas of shallow bedrock, could precipitate landslides in already unstable areas.

The potential for landslides partially depends on slope—steep slopes generally having greater potential for landslides than shallow slopes. Other landslide risk factors include the presence of expansive clay minerals; the presence of springs and seeps; and remnant geological features in the slope profile such as bedding planes. Construction activities can result in human-caused landslides in landslide-prone areas. Removing soil at the base of an unstable slope can decrease slope stability and result in a landslide. Excavation or blasting in geological hazard areas at substations and transmission tower sites or during road building could destabilize slopes, resulting in landslides, soil erosion, and stream sedimentation. Mid-slope road construction, concentration of drainage water on unstable ground, and removal of vegetation during construction could also trigger landslides (Centers for Disease Control and Prevention 2003).

Table 3-2 shows the percentage of the analysis area containing unstable landforms as identified in the Oregon DOGAMI SLIDO-2 (2011b). A total of 13.1 percent of the analysis area for the proposed B2H Project is within areas identified as unstable by DOGAMI SLIDO-2. Based on the OPS landslide risk analysis, 99 percent of the analysis area for the Proposed Action and the alternatives is located in low-risk landslide areas. Generally, the risks to alternatives that are shorter than the comparable Proposed Action segments are proportionally lower, while the risks to alternatives longer than the Proposed Action are proportionally higher, due to the number of structures that would be exposed to geological hazards. Similarly, the risks of creating slope instabilities due to construction activity would be proportionally lower for the shorter alternatives and higher for the longer alternatives.

Shallow Bedrock

Foundations for transmission line towers can be up to 30 feet below ground surface. Construction in areas of shallow bedrock may require blasting. The vibrations generated by blasting could also result in slope instability, damage to nearby structures, damage to water wells, and disturbance to wildlife.

Soils

This section describes the potential for the Proposed Action and the alternatives to create impacts of erosion and disturbance of sensitive soils to soil resources from construction, operation, and maintenance in the analysis area, and describes the reclamation potential of soils that would be affected. Overall, the differences in effects between the alternatives would be driven primarily by the relative lengths of the alternatives (longer routes would result in greater overall ground disturbance). The presence of erodible and sensitive soils and the reclamation potential of soils are similar between the alternatives, with a few exceptions which are discussed in the soils effects summary below.

The treatment of soils for operations would result in more stable soil conditions during the operations phase than those resulting from construction. For instance, substation sites would be covered with free-draining rock, which would isolate the native soils from erosive conditions. Service roads not retained for operations would be seeded with a grass mix and allowed to revegetate, thereby minimizing the surface exposed to erosive conditions. For normal maintenance activities, vehicles would drive over vegetation. For nonroutine maintenance requiring access by larger vehicles, the full width of the access road may be used. Access roads would be repaired, as necessary, but would not be routinely graded in order to minimize impacts on vegetation and soils.

Erosion

B2H Project construction activities that could affect soil erosion include clearing, grubbing, and grading along the right-of-way and at additional temporary workspaces; trenching; backfilling; excavating; and construction of permanent structures, such as transmission line towers, access and service roads, co-generation sites, and substations. Ground clearing construction would increase the potential for erosion, particularly on slopes exceeding 25 percent. Removal of protective vegetation would expose soil to potential wind and water erosion.

Short-term ground disturbance during construction of the Proposed Action would affect approximately 6,750 acres. The construction area includes the operations area plus the areas temporarily needed for construction, such as tower-erection areas at each structure, laydown yards, staging areas, and tensioning sites. Areas used only for construction would be reclaimed as soon as possible, which may include regarding of original land contours, replacing topsoil, and conducting revegetation. Table 3-12 shows the number of acres with increased erosion potential in the construction disturbance area for the Proposed Action and alternatives for each county. Areas not also used for operations would be reclaimed as soon as possible after construction. Long-term operations disturbances would affect approximately 1,237 acres. The footprint of the operations area includes the permanent structures and service roads. Table 3-13 shows the disturbance areas for long-term project operations for the Proposed Action and alternatives.

Table 3-12. Increased Erosion Potential in the Project Construction Disturbance Area (acres)

Route Name	County	Total Acres	Highly Wind Erodible	High *K* Factor	Slopes Greater Than 25%
Proposed Action	Morrow	937.4	516.7	703.6	0.0
Proposed Action	Umatilla	1,095.7	39.1	950.3	43.9
Proposed Action	Union	861.6	0.0	689.9	0.0
Proposed Action	Baker	1,483.4	9.0	246.3	762.0
Proposed Action	Malheur	1,582.1	336.6	375.0	0.0
Proposed Action	Owyhee	737.8	78.2	0.0	0.0
Proposed 138/69-kV Rebuild	Baker	52.0	0.0	0.0	52.0
Total Proposed Action		6,750.0	979.7	2965.2	857.8
Comparison of Proposed Action and Alternatives					
Proposed Action Compared to Horn Butte Alternative	Morrow	634.9	487.9	562.9	0.0
Horn Butte Alternative	Morrow	608.6	461.5	567.6	0.0
Proposed Action Compared to Longhorn Alternative and Variation	Morrow	634.9	487.9	562.9	0.0

Route Name	County	Total Acres	Highly Wind Erodible	High *K* Factor	Slopes Greater Than 25%
Longhorn Alternative	Morrow/Umatilla	486.0	436.3	246.5	0.0
Longhorn Variation	Morrow	488.2	453.3	253.4	0.0
Proposed Action Compared to Glass Hill Alternative	Union	166.6	0.0	149.4	0.0
Glass Hill Alternative	Union	184.6	0.0	183.0	0.0
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	1,033.9	0.0	251.8	406.8
Timber Canyon Alternative	Union/Baker	1,370.8	0.0	778.2	229.6
Proposed Action Compared to Flagstaff Alternative	Baker	396.7	0.0	112.3	81.1
Flagstaff Alternative, including 230kV Rebuild	Baker	388.8	0.0	101.9	145.8
Proposed Action Compared to Burnt River Mountain Alternative	Baker	363.7	0.0	0.0	358.0
Burnt River Mountain Alternative	Baker	342.9	0.0	110.4	202.6
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	730.2	112.2	120.7	83.4
Tub Mountain South Alternative	Baker/Malheur	680.5	284.5	418.5	198.5
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	661.9	83.5	92.1	65.7
Willow Creek Alternative	Baker/Malheur	572.3	195.0	351.6	145.1
Proposed Action Compared to Malheur S Alternative	Malheur	710.5	197.0	197.0	0.0
Malheur S Alternative	Malheur	874.4	161.5	255.8	0.0
Proposed Action Compared to Malheur A Alternative	Malheur	710.5	197.0	197.0	0.0
Malheur A Alternative	Malheur	869.3	154.4	248.7	0.0
Proposed Action Compared to Double Mountain Alternative	Malheur	133.7	34.4	34.4	0.0
Double Mountain Alternative	Malheur	175.5	56.5	56.5	0.0

Table 3-13. Erosion Factors in the Project Operations Disturbance Area (acres)

Route Name	County	Acres	Highly Wind Erodible	High *K* Factor	Slopes Greater Than 25%
Proposed Action	Morrow	149.1	76.3	94.3	0
Proposed Action	Umatilla	185.9	0.1	167.5	7.8
Proposed Action	Union	145.5	0	109.3	0
Proposed Action	Baker	301.5	2.6	51.1	165.4
Proposed Action	Malheur	294.1	53.2	61.4	0
Proposed Action	Owyhee	145.5	13.6	0	0
Proposed 138/69-kV Rebuild	Baker	16.0	0	0	16.0
	Total Proposed Action	1,237.4	146	483.5	189.2
Comparison of Proposed Action and Alternatives					
Proposed Action Compared to Horn Butte Alternative	Morrow	85.6	71.7	77.9	0
Horn Butte Alternative	Morrow	100.7	86.8	96.5	0
Proposed Action Compared to Longhorn Alternative and Variation	Morrow	85.6	71.7	77.9	0
Longhorn Alternative	Morrow	75.4	74.1	45.6	0
Longhorn Variation	Morrow	58.0	58.0	30.8	0
Proposed Action Compared to Glass Hill Alternative	Union	30.2	0	22.4	0
Glass Hill Alternative	Union	44.2	0	42.5	0
Proposed Action Compared to Timber Canyon Alternative	Baker	205.1	0	48.5	90.8
Timber Canyon Alternative	Union/Baker	292.9	0	160.7	49.5
Proposed Action Compared to Flagstaff Alternative	Baker	57.7	0	20.0	10.8
Flagstaff Alternative, including 230-kV Rebuild	Baker	57.4	0	15.4	26.0
Proposed Action Compared to Burnt River Mountain Alternative	Baker	87.2	0	0	84.5
Burnt River Mountain Alternative	Baker	68.1	0	20.2	40.5
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	161.5	23.2	27.2	21.2
Tub Mountain South Alternative	Baker/Malheur	106.6	45.0	70.2	29.5
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	147.2	16.5	20.5	18.5
Willow Creek Alternative	Baker/Malheur	98.7	36.8	68.9	21.3
Proposed Action Compared to Malheur S Alternative	Malheur	109.9	27.0	27.0	0
Malheur S Alternative	Malheur	185.5	34.8	47.3	0
Proposed Action Compared to Malheur A Alternative	Malheur	109.9	27.0	27.0	0
Malheur A Alternative	Malheur	179.4	34.8	47.3	0
Proposed Action Compared to Double Mountain Alternative	Malheur	19.1	3.5	3.5	0
Double Mountain Alternative	Malheur	30.8	11.5	11.5	0

Sensitive Soils

Soil with a low *T* factor (low soil-loss tolerance) is considered sensitive soil due to the special characteristics that separate them from other soil types in the analysis area. Construction on soil with a low *T* factor may cause erosion on soil not well suited to soil loss. Table 3-14 shows the number of acres of sensitive soils in the Proposed Action and alternatives construction disturbance area for each county. Long-term operations disturbances would impact fewer acres. The footprint of the operations area includes the permanent structures and service roads. No additional soil compaction would occur during project operations. Vehicle travel would occur on established and permitted access roads. Table 3-15 shows the disturbance areas for operations.

Table 3-14. Acres of Sensitive Soils in the Proposed Action and Alternatives Construction Disturbance Area

Route Name	County	Total Acres	Low *T* Factor	Arable Land
Proposed Action	Morrow	937.4	161.7	859.7
Proposed Action	Umatilla	1095.7	636.6	971.8
Proposed Action	Union	861.6	267.8	405.5
Proposed Action	Baker	1483.4	974.0	1062.5
Proposed Action	Malheur	1582.1	1245.6	74.6
Proposed Action	Owyhee	737.8	659.6	110.0
Proposed 138/69-kV Rebuild	Baker	52.0	52.0	44.3
	Total Proposed Action	6750.0	3997.2	3528.3
Comparison of Proposed Action and Alternatives				
Proposed Action Compared to Horn Butte Alternative	Morrow	634.9	0	613.6
Horn Butte Alternative	Morrow	608.6	0	587.2
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	634.9	0	613.6
Longhorn Alternative	Morrow	486.0	0	462.4
Longhorn Variation	Morrow	488.2	0.0	471.3
Proposed Action Compared to Glass Hill Alternative	Union	166.6	98.5	96.6
Glass Hill Alternative	Union	184.6	123.5	138.0
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	1033.9	566.5	830.2
Timber Canyon Alternative	Union/Baker	1370.8	707.2	725.6
Proposed Action Compared to Flagstaff Alternative	Baker	396.7	279.7	304.6
Flagstaff Alternative, including 230-kV Rebuild	Baker	388.8	114.6	305.1
Proposed Action Compared to Burnt River Mountain Alternative	Baker	363.7	76.0	314.3
Burnt River Mountain Alternative	Baker	342.9	287.1	232.9
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	730.2	616.7	47.3
Tub Mountain South Alternative	Baker/Malheur	680.5	207.4	161.5

Route Name	County	Total Acres	Low *T* Factor	Arable Land
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	661.9	577.1	44.7
Willow Creek Alternative	Baker/Malheur	572.3	243.5	100.1
Proposed Action Compared to Malheur S Alternative	Malheur	710.5	513.5	73.2
Malheur S Alternative	Malheur	874.4	712.9	0.1
Proposed Action Compared to Malheur A Alternative	Malheur	710.5	513.5	73.2
Malheur A Alternative	Malheur	869.3	715.0	0.1
Proposed Action Compared to Double Mountain Alternative	Malheur	133.7	99.3	0
Double Mountain Alternative	Malheur	175.5	119.0	0

Table 3-15. Acres of Sensitive Soils in the Proposed Action and Alternatives Operations Disturbance Area

Route Name	County	Acres	Low *T* Factor	Arable Land
Proposed Action	Morrow	149.1	47.0	131.8
Proposed Action	Umatilla	185.9	110.7	158.6
Proposed Action	Union	145.5	55.7	65.5
Proposed Action	Baker	301.5	192.0	212.0
Proposed Action	Malheur	294.1	240.8	0.6
Proposed Action	Owyhee	145.5	131.8	11.0
Proposed 138/69-kV Rebuild	Baker	16.0	16.0	13.1
Total Proposed Action		1237.4	794.0	592.7
Comparison of Proposed Action and Alternatives				
Proposed Action Compared to Horn Butte Alternative	Morrow	85.6	0	83.9
Horn Butte Alternative	Morrow	100.7	0	99.0
Proposed Action Compared to Longhorn Alternative and Variation	Morrow	85.6	0	83.9
Longhorn Alternative	Morrow	75.4	0	72.5
Longhorn Variation	Morrow	58.0	0.0	56.4
Proposed Action Compared to Glass Hill Alternative	Union	30.2	14.5	18.5
Glass Hill Alternative	Union	44.2	26.0	32.8
Proposed Action Compared to Timber Canyon Alternative	Baker	205.1	107.1	151.4
Timber Canyon Alternative	Union/Baker	292.9	170.8	157.2
Proposed Action Compared to Flagstaff Alternative	Baker	57.7	44.5	43.2
Flagstaff Alternative, including 230-kV Rebuild	Baker	57.4	12.8	41.2
Proposed Action Compared to Burnt River Mountain Alternative	Baker	87.2	15.8	76.1
Burnt River Mountain Alternative	Baker	68.1	58.7	46.6

Route Name	County	Acres	Low *T* Factor	Arable Land
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	161.5	137.7	16.2
Tub Mountain South Alternative	Baker/Malheur	106.6	32.5	16.9
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	147.2	130.1	16.1
Willow Creek Alternative	Baker/Malheur	98.7	41.1	11.8
Proposed Action Compared to Malheur S Alternative	Malheur	109.9	83.0	0.2
Malheur S Alternative	Malheur	185.5	150.7	0.1
Proposed Action Compared to Malheur A Alternative	Malheur	109.9	83.0	0.2
Malheur A Alternative	Malheur	179.4	144.6	0.1
Proposed Action Compared to Double Mountain Alternative	Malheur	19.1	15.6	0
Double Mountain Alternative	Malheur	30.8	19.4	0

Reclamation Potential

Soils that are affected by construction activities through erosion, loss of topsoil, or compaction, but that are not in operations areas would be reclaimed to restore them as nearly as possible to their preconstruction conditions. Several soil properties affect the ability to conduct soil reclamation, especially reestablishment of vegetation, including the amount of stony-rocky soil and droughty soil. The amount of shallow bedrock can also affect the success of soil reclamation.

Soil compaction would occur in the construction disturbance area from vehicle and heavy equipment use. Areas under roadways, structures, and high-use areas would be most affected. Soil that is very fine grained and has poor drainage typically has the greatest potential for soil compaction; however, all soil would have some potential for soil compaction, and compacted soil would need to be ripped, loosened, or otherwise treated using BMPs at the end of the project to restore soil productivity. If extensive construction blasting is necessary, the amount of stony-rocky soil may increase as blasted rock is incorporated into nearby soils. Revegetation in stony-rocky or droughty soil likely requires selecting drought-resistant species; seasonal planting at times when moisture is likely; or possible mulching, watering, or soil amendments.

Table 3-16 shows the number of acres of soil factors that could adversely affect reclamation potential in the construction disturbance areas for the Proposed Action and alternatives for each county. Areas not also used for operations would be reclaimed as soon as possible after construction. Operations areas would not be reclaimed; therefore, the soils factors affecting reclamation potential in operations disturbance areas were not tabulated.

Table 3-16. Acres of Soil Factors Affecting Reclamation Potential in the Proposed Action and Alternatives Construction Disturbance Area

Route Name	County	Acres	Highly Compaction Prone	Stony-Rocky	Droughty
Proposed Action	Morrow	937.4	0	161.7	678.5
Proposed Action	Umatilla	1,095.7	0	369.6	408.7
Proposed Action	Union	861.6	0	647.5	647.5
Proposed Action	Baker	1,483.4	0	1,014.7	1,422.8
Proposed Action	Malheur	1,582.1	0	1,172.3	1,267.3
Proposed Action	Owyhee	737.8	0	126.4	204.6
Proposed 138/69-kV Rebuild	Baker	52.0	0	0.0	52.0
Total Proposed Action		6,750.0	0.0	3,492.2	4,681.4
Comparison of Proposed Action and Alternatives					
Proposed Action Compared to Horn Butte Alternative	Morrow	634.9	0	0	487.9
Horn Butte Alternative	Morrow	608.6	0	0	461.5
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	634.9	0	0	487.9
Longhorn Alternative	Morrow	486.0	0	0	436.3
Longhorn Variation	Morrow	488.2	0	0.0	453.3
Proposed Action Compared to Glass Hill Alternative	Union	166.6	0	149.4	149.4
Glass Hill Alternative	Union	184.6	0	183.0	183.0
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	1,033.9	0	896.5	973.3
Timber Canyon Alternative	Union/Baker	1,370.8	0	1,304.3	1,330.5
Proposed Action Compared to Flagstaff Alternative	Baker	396.7	0	360.8	360.8
Flagstaff Alternative, including 230-kV Rebuild	Baker	388.8	0	260.5	260.5
Proposed Action Compared to Burnt River Mountain Alternative	Baker	363.7	0	285.6	361.6
Burnt River Mountain Alternative	Baker	342.9	0	196.1	342.9
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	730.2	0	527.3	680.5
Tub Mountain South Alternative	Baker/Malheur	680.5	0	252.0	470.8
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	661.9	0	505.4	612.2
Willow Creek Alternative	Baker/Malheur	572.3	0	209.5	395.3

Route Name	County	Acres	Highly Compaction Prone	Stony-Rocky	Droughty
Proposed Action Compared to Malheur S Alternative	Malheur	710.5	0	504.9	504.9
Malheur S Alternative	Malheur	874.4	0	618.6	654.1
Proposed Action Compared to Malheur A Alternative	Malheur	710.5	0	504.9	504.9
Malheur A Alternative	Malheur	869.3	0	620.6	661.7
Proposed Action Compared to Double Mountain Alternative	Malheur	133.7	0	99.3	99.3
Double Mountain Alternative	Malheur	175.5	0	119.0	119.0

Minerals

Short-term effects on mineral resources include restriction of exploration for mineral resources or access to existing mines during the construction period. The presence of existing mineral claims and leases could interfere with plans to construct the B2H Project. As part of the preconstruction process, IPC would identify mineral claims and leases and either negotiate permission to use the land surface in these areas or relocate the transmission line to avoid existing claims and leases. Where access to mineral resources may be restricted, IPC would provide compensation for damage, access rights, and easements with mine owners, claimants, and leaseholders. If necessary, IPC would provide mine operators with mine access across the B2H Project area during construction.

Construction of the project would result in the need for salable minerals, including fill material for grade changes, sand and gravel for concrete production, gravel for roadbeds, and similar uses. The use of salable minerals would provide an economic benefit to local mineral providers but would also result in consumption of materials that would not be available for other uses; therefore, this use would be an irretrievable commitment of resources.

Long-term effects during B2H Project operations could restrict mining companies from obtaining new mining claims or leases within the transmission line’s 250-foot-wide right-of-way. The operations area is smaller than the construction disturbance area, but the time interval is much longer; 50 years for operations, compared to about 3 years for construction. Project operations would result in removing acreage from availability for mining for the life of the project. However, operation of the B2H Project would affect a small fraction of the mineral resources available in eastern Oregon and southwestern Idaho.

Table 3-17 and Table 3-18 summarize mineral claims and leases located in the construction and operations disturbance areas for the proposed B2H Project and the alternatives. The information for the alternatives is compared to the information for the section of the Proposed Action.

Table 3-17. Claims, Leases, and Salable Mineral Areas within Construction Disturbance Areas

Route Name	County	No. of Oil and Gas Wells	Oil and Gas Lease (acres)	Mining Claims (acres)	Geothermal Lease (acres)	MMD (acres) [1]
Proposed Action	Morrow (Oregon)	0	0	0	0	0
Proposed Action	Umatilla (Oregon)	0	0	0	0	0
Proposed Action	Union (Oregon)	0	0	0	0	0
Proposed Action	Baker (Oregon)	0	0	34	0	0
Proposed Action	Malheur (Oregon)	1	403	84	56	0
Proposed Action	Owyhee (Idaho)	0	0	50	0	16
Proposed 138/69-kV Rebuild	Baker (Oregon)	0	0	1	0	0
Total Proposed Action		1	403	168	56	16
Comparison of Proposed Action and Alternatives						
Proposed Action Compared to Horn Butte Alternative	Morrow (Oregon)	0	0	0	0	0
Horn Butte Alternative	Morrow (Oregon)	0	0	0	0	0
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow (Oregon)	0	0	0	0	0
Longhorn Alternative	Morrow (Oregon)	0	51	0	0	0
Longhorn Variation	Morrow (Oregon)	0	0.2	0	0	0
Proposed Action Compared to Glass Hill Alternative	Union (Oregon)	0	0	0	0	0
Glass Hill Alternative	Union (Oregon)	0	0	0	0	0
Proposed Action Compared to Timber Canyon Alternative	Baker (Oregon)	0	0	21	0	0
Timber Canyon Alternative	Union/Baker (Oregon)	0	0	20	0	0
Proposed Action Compared to Flagstaff Alternative	Baker (Oregon)	0	0	21	0	0
Flagstaff Alternative (including 230-kV rebuild)	Baker (Oregon)	0	0	0	0	0

Route Name	County	No. of Oil and Gas Wells	Oil and Gas Lease (acres)	Mining Claims (acres)	Geothermal Lease (acres)	MMD (acres) [1]
Proposed Action Compared to Burnt River Mountain Alternative	Baker (Oregon)	0	0	0	0	0
Burnt River Mountain Alternative	Baker (Oregon)	0	0	34	0	0
Proposed Action- Compared to Tub Mountain South Alternative	Baker, Malheur (Oregon)	0	95	21	26	0
Tub Mountain South Alternative	Baker, Malheur (Oregon)	0	376	45	75	0
Proposed Action- Compared to Willow Creek Alternative	Baker, Malheur (Oregon)	0	49	21	1	0
Willow Creek Alternative	Baker, Malheur (Oregon)	0	50	2	0	0
Proposed Action Compared to Malheur S Alternative	Malheur (Oregon)	1	210	34	0	0
Malheur S Alternative	Malheur (Oregon)	1	156	109	0	0
Proposed Action Compared to Malheur Alternative A	Malheur (Oregon)	1	210	34	0	0
Malheur Alternative A	Malheur (Oregon)	1	156	129	0	5
Proposed Action Compared to Double Mountain Alternative	Malheur (Oregon)	1	85	0	0	0
Double Mountain Alternative	Malheur (Oregon)	1	136	0	0	0

Table Note: [1] MMD = mineral materials disposal, which is a classification for common salable materials, such as sand and gravel.

Table 3-18. Claims, Leases, and Salable Mineral Areas within Operations Disturbance Areas

Route Name	County	No. of Oil and Gas Wells	Oil and Gas Lease (acres)	Mining Claims (acres)	Geothermal Lease (acres)	MMD (acres) [1]
Proposed Action	Morrow (Oregon)	0	0	0	0	0
Proposed Action	Umatilla (Oregon)	0	0	0	0	0
Proposed Action	Union (Oregon)	0	0	0	0	0

Route Name	County	No. of Oil and Gas Wells	Oil and Gas Lease (acres)	Mining Claims (acres)	Geothermal Lease (acres)	MMD (acres) [1]
Proposed Action	Baker (Oregon)	0	0	6	0	0
Proposed Action	Malheur (Oregon)	1	73	15	17	0
Proposed Action	Owyhee (Idaho)	0	0	11	0	4
Proposed 138/69-kV Rebuild	Baker (Oregon)	0	0	0	0	0
Total Proposed Action		1	73	32	17	4
Comparison of Proposed Action and Alternatives						
Proposed Action Compared to Horn Butte Alternative	Morrow (Oregon)	0	0	0	0	0
Horn Butte Alternative	Morrow (Oregon)	0	0	0	0	0
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow (Oregon)	0	0	0	0	0
Longhorn Alternative	Morrow (Oregon)	0	7	0	0	0
Longhorn Variation	Morrow (Oregon)	0	0	0	0	0
Proposed Action Compared to Glass Hill Alternative	Union (Oregon)	0	0	0	0	0
Glass Hill Alternative	Union (Oregon)	0	0	0	0	0
Proposed Action Compared to Timber Canyon Alternative	Baker (Oregon)	0	0	5	0	0
Timber Canyon Alternative	Union/Baker (Oregon)	0	0	5	0	0
Proposed Action Compared to Flagstaff Alternative	Baker (Oregon)	0	0	5	0	0
Flagstaff Alternative (including 230-kV rebuild)	Baker (Oregon)	0	0	0	0	0
Proposed Action- Compared to Burnt River Mountain Alternative	Baker (Oregon)	0	0	0	0	0
Burnt River Mountain Alternative	Baker (Oregon)	0	0	5	0	0
Proposed Action- Compared to Tub Mountain South Alternative	Baker, Malheur (Oregon)	0	16	6	6	0

Route Name	County	No. of Oil and Gas Wells	Oil and Gas Lease (acres)	Mining Claims (acres)	Geothermal Lease (acres)	MMD (acres) [1]
Tub Mountain South Alternative	Baker, Malheur (Oregon)	0	70	11	16	0
Proposed Action- Compared to Willow Creek Alternative	Baker, Malheur (Oregon)	0	7	6	0	0
Willow Creek Alternative	Baker, Malheur (Oregon)	0	15	1	1	0
Proposed Action Compared to Malheur S Alternative	Malheur (Oregon)	1	35	1	0	0
Malheur S Alternative	Malheur (Oregon)	1	31	20	0	0
Proposed Action Compared to Malheur Alternative A	Malheur (Oregon)	1	35	1	0	0
Malheur Alternative A	Malheur (Oregon)	1	31	25	0	1
Proposed Action Compared to Double Mountain Alternative	Malheur (Oregon)	0	12	0	0	0
Double Mountain Alternative	Malheur (Oregon)	0	22	0	0	0

Table Note: [1] MMD = mineral materials disposal, which is a classification for common salable materials, such as sand and gravel.

Paleontological Resources

Direct effects from B2H Project construction would be long-term, and include potential damage to paleontological specimens and the loss of associated scientific information. However, construction activities can provide opportunities to recover specimens and associated scientific information that might be otherwise undiscovered. Indirect effects of project construction could include unauthorized collecting or destruction of paleontological specimens due to increased public access to sites. The construction sources of greatest potential impact would be the geotechnical surveys, excavation and leveling of pads for towers and substations, and grading of access roads.

The extent of soil cover over fossil-bearing rock throughout the Proposed Action and alternatives is not known at this time. Soil in some areas may consist of loosely or unconsolidated Tertiary sediments that could contain fossils. Where soil is present, it may provide a buffer between fossil-bearing rock and construction activities.

No additional direct effects on paleontological resources from B2H Project operations beyond the effects of construction are anticipated. Possible indirect effects include unauthorized collecting or destruction of paleontological specimens due to increased public access. Indirect effects could continue for the life of the B2H Project but are difficult to quantify. If important paleontological resources are discovered during construction, mitigation measures would be developed either to collect and curate them or to protect them from vandalism.

BLM's consultation with Native American tribes has indicated that paleontological resources are an integral part of the spiritual landscape. Disruption of intact fossil beds, regardless of species and/or associated time period, may be considered an impact on sacred resources.

DESIGN FEATURES

GEOLOGICAL HAZARDS

The design criteria for transmission line towers typically exceed earthquake-induced loads; therefore, seismic-induced accelerations on the tower structures are not considered a geologic hazard. IPC would be required to follow the 2012 International Building Code design standards for earthquake-resistant structures for all other project structures, which would further reduce the risk of damage from earthquakes.

Geotechnical investigations of ground stability in the vicinity of potential blasting areas, particularly in areas identified as having shallow bedrock or in areas of instability identified by the Oregon DOGAMI SLIDO-2 (2001b), would reduce the risk of blasting-induced landslides. IPC would conduct geotechnical studies of the terrain types in which construction would take place, including site-specific studies of areas where blasting would be conducted to accommodate tower construction. IPC proposed a Framework Blasting Plan in its *Revised Plan of Development* (2011: Appendix F). It would prepare and include a final Blasting Plan in its final Plan of Development as a condition for approval of the right-of-way application. IPC would define the procedures to prevent any unstable condition that may result from blasting operations. Blasting operations would be designed to mitigate unstable soil or geological conditions, which could result in hazards to people or property such as landslides, mudslides, and ground failure.

SOILS

IPC would prepare a SWPPP and an erosion and sediment control plan (ESCP) containing BMPs to control soil erosion by both water and wind caused by ground disturbing activities during construction and operations. A stormwater team would be assembled to manage construction stormwater issues, to conduct the required inspections, to provide guidance to construction crews, and to maintain and update the SWPPP and ESCP as needed. The SWPPP and ESCP would identify areas with critical erosion conditions that may require special construction activities or additional BMPs to minimize soil erosion and would be modified as necessary to account for changing construction conditions and schedules.

Specific design features in Appendix C include:

- **REC-12**—Areas within the right-of-way, lay-down or staging yards, and other areas of extensive vehicle travel and material storage may contain compacted soils. These soils would be de-compacted on a case-by-case basis.

- **REC-13—**IPC may use soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) on a case-by-case basis.
- **OM-19**—Reseed significantly disturbed areas with a non-invasive seed mix approved by the land-managing agency or property owner.
- **OM-20—**Employ appropriate interim erosion and/or sediment control measures if seeding cannot immediately take place.
- **OM-21**—Where necessary, interim erosion and/or sediment control measures would be used.

Temporary and permanent BMPs would be used to control erosion, sediment, and other pollutants associated with construction-related activities. BMPs would be installed and maintained until disturbed areas meet final stabilization criteria. Damaged temporary erosion and sediment control structures would be repaired in accordance with the SWPPP and ESCP.

Temporarily disturbed lands within the right-of-way would be recontoured to match surrounding landscapes. Recontouring would emphasize restoration of the existing drainage patterns and landform to preconstruction conditions, to the extent practicable. (Tower pads and most roads would not be recontoured.) In construction areas where recontouring is not required, vegetation would be left in place wherever possible, and the original contour would be maintained to avoid excessive root damage and allow for resprouting. Vegetation not consistent with minimum clearance distances between trees and transmission line must be maintained for line safety and reliability (as required by North American Electric Reliability Corporation's Transmission Vegetation Management Program).

Activities within the right-of-way, laydown and staging yards, and other areas of extensive vehicle travel and material storage may cause compacted soils. These soils would be decompacted on a case-by-case basis.

Reclamation seeding methods would include broadcast seeding, drill seeding or hydro seeding/hydro mulching (or a combination of methods). Seeding methods would be chosen based on the type of seed, disturbance level, soil type, terrain, and precipitation levels for the area to be reclaimed. Seed mixtures and seeding methods would be reviewed and approved by the land management agency or private landowner. IPC would develop and incorporate a Reclamation and Revegetation Plan identifying reclamation stipulations in its final Plan of Development. IPC may use soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) as needed to ensure reclamation success.

Upon completion of construction, permanent erosion and sediment BMPs would be installed in accordance with the SWPPP and ESCP. Final cleanup would ensure all construction areas are free of construction debris including—but not limited to—assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices would be left in place.

MINERALS

Before construction, IPC would call each state's utility locating services so that buried utilities, including oil- and gas-gathering lines and pipelines, could be avoided. Implementation of these measures would avoid adverse effects on mineral exploration and development during the short-term construction period. IPC would be required to coordinate with the operators of active mineral operations and to compensate for any loss of access to mineral operations.

PALEONTOLOGICAL RESOURCES

Table 3-9 identifies rock formations with high or very high potential for fossils that occur in the analysis area and that may be present in the construction disturbance area of the Proposed Action and alternatives. Pursuant to the requirements of IM 2009-011 (BLM 2008), preconstruction field surveys would be conducted in areas of PFY rankings of 4 or higher in order to identify areas that should be avoided if possible, or areas that would require construction monitoring to protect paleontological resources during the construction period. IPC would consult with the BLM on areas of PFY Ranking 3 to determine whether field surveys would be required. All paleontological resources work conducted for the Project would be performed by qualified paleontologists.

A Paleontological Monitoring and Mitigation Plan would be developed for areas with identified important paleontological resources. The plan would include appropriate measures to mitigate adverse effects on paleontological resources, the preparation and curation of any fossil collected from federal lands, and for the preparation of a final report based on the data recovered for activities on federal lands. Avoidance areas would be flagged prior to construction activities. Flagging would be removed once construction is completed in an area.

An Unanticipated Discovery Plan would be included as part of the Paleontological Monitoring and Mitigation Plan. This plan would specify what steps would be taken if a subsurface fossil is discovered during construction, including stopping construction in the vicinity of the find, notification of the appropriate land management agency, contacting a qualified paleontologist to conduct an evaluation of the find, and the development of an approved data recovery program or other mitigation measures.

IPC would monitor areas with high potential for fossils to detect any resources uncovered during construction activities. If fossil materials are discovered during Project construction, all surface-disturbing activities in the vicinity of the find would cease until notification to proceed is given by the authorized officer. The site would be protected to reduce the risk of damage to fossils and context.

To minimize unauthorized collecting of paleontological resources, all workers would attend mandatory training on the importance of paleontological resources and the relevant federal regulations that protect them.

RESIDUAL IMPACTS

Residual impacts on earth resources are presented for the entire B2H Project area because the differences in effects among the project segments are small. However, residual impacts from alternatives in Segments 1 and 3 are notably different and are therefore presented separately.

Geological Hazards

The risk interval for geological hazards during construction is approximately 2 years and is therefore temporary and short term. The overall risk of damage to project facilities due to earthquakes is low for the Proposed Action and the alternatives. With preconstruction site analysis, site-specific design, and incorporation of the design features the risk of landslide damage to B2H project infrastructure during construction and operations would be low for the Proposed Action and the alternatives. With implementation of the final Blasting Plan, shallow bedrock poses a low risk of adverse impact for the Proposed Action and the alternatives.

While still rated as low for landslide risk, the Timber Canyon and Malheur A Alternatives have somewhat higher landslide risk than the Proposed Action. The Timber Canyon Alternative has mapped landslides for 3.3 percent of the analysis area compared to 0 percent for the Proposed Action; the Malheur A Alternative has mapped landslides for 1.2 percent of the analysis area compared to 0 percent for the Proposed Action. The Timber Canyon Alternative also has 1.6 miles of the transmission line in areas with moderate landslide hazard, while the Proposed Action has none. This suggests that the Timber Canyon Alternative would encounter somewhat more slope instability than the Proposed Action and would require additional engineering and preventive measures beyond the standard design features.

Soils

In most project segments, the disturbances to soils and potential for reclamation success of the alternatives are generally similar for all alternatives. There would be minor differences in effects based on the relative lengths and total disturbed areas of the alternatives. Residual direct and indirect erosion impacts on soils caused by construction of the Proposed Action and alternatives would be short term during the construction period and localized in the construction areas. Short-term effects would therefore be moderate with effective implementation of the required erosion control design standards and BMPs.

For all the alternatives, the short-term effects on both erodible and sensitive soils would be highest during the construction and reclamation period. Reclamation after construction would minimize effects on soils with low soil-loss tolerance during the long-term operations phase of the project. Revegetation in stony-rocky and droughty soils would require selection of drought-resistant species, seasonal planting at times when moisture is likely, or possible mulching, watering or soil amendments, which would be conditions of project approval.

With effective reclamation of disturbed areas that are not necessary to project operations, and effective implementation and long-term maintenance of erosion control measures, long-term effects on soils during operations would be low. Effective implementation of the required design features during construction, operations and maintenance would manage soil erosion and avoid long-term adverse effects on soil resources.

Segment 1—Morrow-Umatilla

The Horn Butte Alternative, the Longhorn Alternative, and the Longhorn Variation are all shorter than the Proposed Action in the Morrow-Umatilla Segment and would have fewer acres of construction and operations disturbance. The construction and operations disturbance areas of the Horn Butte Alternative are comparable to the Proposed Action because, although the transmission line disturbance would be smaller, the footprint of the Horn Butte Substation would nearly offset the difference.

The Longhorn Alternative and Longhorn Variation would both be shorter than the Proposed Action, and would also have smaller areas of construction and operations disturbance. The effects would be accordingly lower than those of the Proposed Action.

Segment 3—Baker Valley

There are notable differences in soil in the Baker Valley Segment because of the greater length and differences in geography of the Timber Canyon Alternative compared to the Proposed Action and the Flagstaff and Burnt River Mountain Alternatives. The Timber Canyon Alternative would affect approximately twice as many acres of low *T* factor sensitive soils and nearly three times as many acres of high *K* factor erodible soils as the Proposed Action. However, the Timber Canyon Alternative would occupy less area of slopes greater than 25 percent than the Proposed Action, although the Timber Canyon Alternative is approximately 16 miles longer. The Flagstaff and Burnt River Mountain Alternatives would have effects similar to the Proposed Action in the Baker Valley Segment.

MINERALS

Direct and indirect, short-term and long-term effects on mineral resources and extractive activities for the proposed B2H Project as a whole would be low because construction and operation of the Proposed Action or the alternatives would not displace mineral operations. The Malheur S and Malheur A alternatives would potentially affect more oil and gas leases and active mining claims than the Proposed Action in the Malheur Segment, but both the Proposed Action and the alternatives in the Malheur Segment would have low effects on mineral resources.

PALEONTOLOGICAL RESOURCES

The potential disturbances to paleontological resources due to the Proposed Action and the alternatives are generally similar in character, with minor variations due to the relative lengths of the alternatives in areas of high potential fossil yield as compared with the Proposed Action. Preconstruction surveys of high PFY areas, successful implementation of the Paleontological Monitoring and Mitigation Plan and Unanticipated Discovery Plan and construction monitoring in areas of high potential for fossil occurrence would minimize adverse effects on paleontological resources and the potential for adverse effects would be low.

As described above, the effects on soils, minerals, and paleontological resources caused by most of the alternatives would be very similar to those caused by the Proposed Action. However, there are notable differences in effects on soil resources in the Morrow-Umatilla Segment and Baker Valley Segment.

3.2.1.7 Mitigation Planning

With effective implementation of design features, the potential for adverse direct and indirect, short- and long-term effects to earth resources would be low. Therefore, no mitigation planning has been identified for earth resources.

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3.2.2 Water Resources

3.2.2.1 Introduction

This section discusses water and floodplains including surface water, groundwater, and wetlands. The regulatory framework, scoping issues, methodology, and affected environment, are presented, followed by a discussion of environmental impacts from the Proposed Action and Alternatives.

3.2.2.2 Regulatory Framework

Water Resources and Floodplains

Federal

Water resources and floodplains are federally regulated under the Clean Water Act (CWA) (33 U.S.C. 1257 et seq.), the Safe Drinking Water Act (42 U.S.C. 300f et seq.), and Executive Order 11988 – Floodplain Management (3 CFR 121, Supp. 177).

Clean Water Act

The CWA was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point-source and certain non-point-source discharges to surface water.

Under authority of the federal CWA, both Idaho and Oregon have developed state water quality standards. The Idaho Department of Environmental Quality (IDEQ) has issued water quality standards that include a description of hydrologic units; a list of priority pollutants; and a list of water-quality-impaired streams within each subbasin, along with the parameters for which the stream is impaired. The Oregon Department of Environmental Quality (ODEQ) maintains water quality standards for groundwater and surface water for Oregon. Oregon standards include a classification system describing the highest beneficial uses, fish use designations, narrative and numeric criteria to support the beneficial uses, and antidegradation policies. The BLM and USFS have developed handbooks and instruction memoranda that provide best management practices to avoid erosion and the resulting contribution of sediments to waters of the United States.

Clean Water Act Section 401: Water Quality Certification

Projects requiring a federal permit and involving any activity that may result in a discharge to navigable waters of the United States must obtain a Section 401 water quality certification to ensure compliance with state water quality standards. Any activity, including river or stream crossings during road, pipeline, or transmission line construction that may result in a discharge into a state waterbody must be certified by the IDEQ or ODEQ. This certification ensures that the proposed activity does not violate water quality standards.

Clean Water Act Section 402: National Pollutant Discharge Elimination System

Section 402 pertains to point and nonpoint discharges to water resources which are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process. Section 402 applies to discharges from all lands, regardless of ownership. The Environmental Protection Agency (EPA) administers the NPDES permit process in Idaho, whereas the ODEQ is delegated to administer the NPDES process in Oregon.

Under NPDES, projects that disturb 1 or more acres are required to obtain a Construction General Permit. This permit, in turn, requires the development and implementation of a stormwater pollution prevention plan (SWPPP). IPC has proposed a framework SWPPP as a part of its Plan of Development. The SWPPP describes best management practices (BMPs) that the discharger will use to protect surface water from stormwater runoff. In Oregon, ODEQ requires the preparation of an erosion and sediment control plan (ESCP), which serves the same purposes as the SWPPP.

If hazardous materials, including fuels and lubricants, are used or stored in quantities exceeding certain minimal quantities, a spill prevention, countermeasure, and containment (SPCC) plan is required. Section 311 (j)(1)(c) of the CWA contains the regulations preventing discharge of oil to surface water.

Clean Water Act Section 404: Discharge of Dredge and Fill Materials

Section 404 authorizes the U.S. Army Corps of Engineers (USACE) to regulate the discharge of dredged or fill material to waters of the United States. Discharges are authorized through issuance of nationwide permits or individual permits for specific activities. Road crossings of wetlands and waterbodies for the project may trigger Section 404 permit requirements.

Clean Water Act Section 303(d): Water Quality Limited Streams and Subbasins

Section 303(d) requires states to establish total maximum daily load (TMDL) programs for streams and lakes that do not meet certain water quality standards. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect bodies of water. In compliance with the CWA, the IDEQ and the ODEQ have identified Section 303(d) water quality limited streams and lakes for development of TMDL criteria. The IDEQ and ODEQ assess impaired streams on a subbasin level, which is the same level as a U.S. Geological Survey eight-digit hydrologic unit code. In some subbasins, if a stream segment does not meet water quality standards, all the streams within that hydrologic unit do not meet the standard.

Safe Drinking Water Act

The Safe Drinking Water Act is the primary federal law to protect the quality of U.S. drinking water and its sources—that is, rivers, lakes, reservoirs, springs, and groundwater wells. Under this act, the EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. This act does not regulate private wells serving fewer than 25 people.

Wellhead Protection Programs

The Safe Drinking Water Act requires states to develop wellhead protection programs and to identify wellhead protection areas for each drinking water well. *Wellhead protection areas* are defined in 42 U.S.C. 300h-7(3) as the "surface and subsurface area surrounding a water well or well field supplying a public water system through which contaminants are reasonably likely to move toward and reach such water well or well field."

Source Water Assessment Plans

In 1996, Congress amended the Safe Drinking Water Act to emphasize the protection of surface water and groundwater sources used for public drinking water. The amendments require that each state possessing primacy over its drinking water develop a source water assessment plan for public drinking water sources, conduct assessments on all public water systems, and make the assessments available to the public.

The Idaho Source Water Assessment Plan was completed in 1999, at which time it was also approved and recognized by the EPA. The IDEQ completed assessments on recognized public water sources, serving as a foundation for public water systems to prepare drinking water protection plans and implement protection measures.

Oregon is in the process of developing its program by expanding the older Wellhead Protection Program and adding surface water sources. The wellhead protection areas became known as drinking water source areas and include groundwater and surface water sources.

Executive Order 11988

Executive Order 11988, Floodplain Management, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. To accomplish this objective, Section 1 of the executive order provides the following direction:

> Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Section 2(a) of the executive order describes the decision-making process required of federal agencies when evaluating projects that have potential impacts on floodplains.

State of Oregon

Removal/Fill in Water

The Oregon Department of State Lands (DSL) regulates waters of the state, including perennial and intermittent streams, lakes, natural and artificial ponds and ditches below their ordinary high-water marks, and reservoirs. In Oregon, a removal/fill permit may be required from the DSL. This permit is required when 50 cubic yards or more of material is removed, filled, or altered within waters of the state, which are defined as “natural waterways including . . . intermittent streams, constantly flowing streams, lakes, wetlands and other bodies of water in this state, navigable and nonnavigable (Oregon Revised Statute [ORS] 196.795-990).” This permit is also required for the removal or fill of any material regardless of the number of cubic yards affected in a stream designated as essential salmon habitat or designated as a scenic waterway. Where an Energy Facility Siting Council site certificate is to be issued, the substantive requirements of that permit are evaluated as part of the Application for Site Certificate.

Ground Water Act

When pumping of groundwater exceeds the long-term natural replenishment of the source aquifer, the Ground Water Act of 1955 (ORS 537.505 et seq.) gives the Oregon Department of Water Resources the authority to declare the aquifer a critical groundwater area and therefore to restrict water use. In groundwater limited areas, Oregon Department of Water Resources restricts future uses of groundwater. No critical groundwater or limited groundwater areas have been mapped in the analysis area.

State of Idaho

The Idaho Department of Water Resources (IDWR) and Idaho Department of Lands (IDL) regulate jurisdictional waters of the state of Idaho under the Idaho Stream Channel Protection Act of 1971 (Title 42, Chapter 38, Idaho Code, 1993), and the Lake Protection Act (Section 58, Chapter 13 et seq., Idaho Code, 2008). The Idaho Stream Channel Protection Act requires that the stream channels of the state and their environment be protected against alteration for the protection of fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, and water quality. The U.S. Army Corps of Engineers and the State of Idaho (through the IDWR and IDL) established a joint review and approval process for activities affecting jurisdictional waterways.

Stream Channel Protection Act

The Idaho Stream Channel Protection Act requires a stream channel alteration permit from the IDWR before beginning any work that will alter the stream channel. A stream channel alteration is defined as any activity that obstructs, diminishes, destroys, alters, modifies, relocates, or changes the natural existing shape or direction of water flow of any stream channel. This definition includes taking material out of the channel or placing material or structures in or across the channel where the potential exists to affect flow in the channel.

Ground Water Management Areas

In Idaho, the director of IDWR can designate critical groundwater areas and groundwater management areas. A *critical groundwater area* is defined as an area that does not have sufficient groundwater to provide a reasonably safe supply for irrigation or other uses at the current or projected rates of withdrawal. No critical groundwater areas have been mapped in the analysis area. The nearest groundwater management area is Grand View-Bruneau, located east of the analysis area in Owyhee County, Idaho.

WETLANDS

FEDERAL

Clean Water Act of 1972

The USACE and EPA regulate the discharge of dredge and fill material into "waters of the United States" under Section 404 of the CWA of 1972. Waters of the U.S. are defined as:

> All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide, all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which would affect interstate or foreign commerce, including such waters which are or could be used by interstate or foreign travelers for recreational or other purposes, or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or which are used or could be used for industrial purposes by industries in interstate commerce; all impoundment of waters otherwise defined as waters of the United States interstate commerce, tributaries of waters, the territorial seas; and wetlands adjacent to waters. (33 CFR 328.3)

The term *wetlands adjacent to waters* includes wetlands that are adjacent to traditionally navigable waters or non-navigable tributaries of traditionally navigable waters that are relatively permanent, (i.e. where the tributaries typically flow year-round or have continuous flow at least seasonally, and wetlands that directly abut such tributaries). The USACE determines whether a given wetland is under federal jurisdiction through project-specific jurisdictional determinations. Many wetlands are protected under the CWA as waters of the U.S. and special aquatic sites.

The USACE issues nationwide permits for certain activities that require Department of the Army authorizations under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. Nationwide Permit 12 Utility Line Activities authorizes activities which result in minimal individual and cumulative adverse effects on the aquatic environment for the construction, maintenance, and repair of utility lines in waters of the U.S. provided general, regional, and special conditions are met, such as maintaining preconstruction contours.

Nationwide Permit 12 also covers related facilities, including substations (provided they do not result in the loss of more than 0.5 acre of waters of the U.S.), structure foundations of overhead utility lines (provided they cover the minimum size necessary), and access roads (provided discharges do not cause the loss of greater than 0.5 acre of non-tidal wetlands of the U.S.). Impact limitations for Nationwide Permit 12 cover all disturbances at a single crossing of a wetland or stream or multiple crossings of the same wetland or stream. Long-term wetland losses greater than 0.5 acre at any single and complete crossing would require an individual Section 404 permit.

The permitting process includes submittal of a permit application. Following the receipt of all required information, the USACE would determine whether the Project qualifies for consideration under the Nationwide Permits or would instead merit review as a standard individual permit. A public notice is issued for projects that do not qualify for Nationwide Permit authorization with a 30 day public comment period. During the public comment period, the USACE consults with other agencies, as needed, and may require a public hearing. The final decision is made on a case-by-case basis through the evaluation of the purpose and need of the proposed B2H Project, the expected short- and long-term impacts of the work, and with consideration given to the comments of other government agencies, adjacent property owners, and the general public.

While contacting the local USACE office prior to making a permit application is encouraged, it is not required; however, by discussing the work prior to submitting an application, the application would likely be processed more efficiently. Discussions of permit applications may consist of on-site reviews or pre-application meetings. These meetings discuss possible problems up front and attempt to rectify initial concerns prior to the permit review.

When all considerations are satisfied, the district engineer would decide to either issue or deny the permit. If a permit is denied, the applicant will receive a written explanation for the reason of denial. The USACE makes every effort possible to process individual permit applications within 120 days of the date of the submission of a complete application. Often, reviews conducted by other agencies USACE timelines.

Executive Order 11990

Executive Order 11990, Protection of Wetlands, directs all federal agencies to minimize the destruction, loss, or degradation of wetlands and to enhance the natural and beneficial values of wetlands.

U.S. Department of Agriculture

The Swampbuster Provision of the Food Security Act of 1985 requires private landowners who are receiving U.S. Department of Agriculture program benefits to comply with federal CWA wetland requirements.

U.S. Forest Service

The Wallowa-Whitman National Forest is in the process of updating their land and resource management plans (LRMPs). The current Wallowa-Whitman National Forest LRMP requires wetlands to be identified and negative impacts to wetlands avoided, if possible, or mitigated (USFS 1990). The revised LRMP and draft EIS for Malheur, Umatilla, and Wallowa-Whitman National Forests was published and made available for public comment March 14, 2014. This revised LRMP includes riparian management areas for streams, ponds, and wetlands. Although specific widths are provided for these features, the intention is to include the greater of either the outer extent of riparian vegetation or the 100-year floodplain. This revised LRMP includes a riparian management area for wetlands greater than 1 acre of 150 feet slope distance from the outer edge of the wetland or from the maximum pool elevation, whichever is greatest. The riparian management area for wetlands smaller than 1 acre is a 100 feet slope distance.

State of Oregon

Oregon Department of State Lands

The DSL regulates wetlands within the wetland boundary. Artificially created ponds and wetlands are regulated under the jurisdiction of the DSL if they are over 1 acre in size or were created in an area originally a water of the state or for authorized wetland mitigation. Wetlands and ponds less than an acre created from upland sites are exempt if their intended purpose is for wastewater or stormwater treatment and storage, settling ponds, agricultural ponds, fire ponds, cooling water, surface mining, log storage, or ornamental ponds. Ditches are regulated if created in a wetland, if they convey flows of a naturally occurring stream and have a “free and open” connection to a waterway, or if they support populations of fish. The roadside, irrigation, and ditches are generally not regulated.

The DSL regulates the removal and placement of material in waterways and wetlands through Oregon’s Removal-Fill Law of 1967. Removal includes the extraction or movement of substrate material from a wetland or stream. Fill includes the placement of organic or inorganic material into a wetland or stream. A threshold of 50 cubic yards of material requires that a permit be obtained for most activities. Waters with designated essential salmon habitat, state scenic waterways, and wetland mitigation areas (including impacts to associated upland buffers) require a removal-fill permit regardless of the size of impact. Temporary fill, including fill required for temporary roads or stockpiling, must be included in all fill calculations and contributes to the fill threshold needed for a removal-fill permit. Fill within federally recognized tribal lands is typically not subject to the requirements of the DSL.

The DSL must ensure that issuance of a removal-fill permit is not inconsistent with the “protection, conservation, and best uses of the water resources of the State” (Oregon Administrative Rule [OAR] 141-085-0565), states that the Project impacts on water resources will be the minimum necessary, and that the Project will not unreasonably interfere with the navigation, fishery, or public recreation of state-owned submerged waters. The following are nine additional factors that the DSL considers prior to permit issuance:

- The public need for the proposed fill or removal and social, economic, or other public benefits likely to result from the proposed removal or fill;
- The economic cost to the public if the proposed fill or removal is not accomplished;
- The availability of alternatives to the B2H Project for which the fill or removal is proposed;
- The availability of alternative sites for the proposed fill or removal;

- Whether the applicant for the proposed fill or removal conforms with sound policies of conservation and would not interfere with public health and safety;
- Whether the proposed fill or removal conforms with existing public uses of waters and with uses designated for adjacent land in an acknowledged comprehensive plan and land-use regulations;
- Where the proposed fill or removal is compatible with the acknowledged comprehensive plan and land use regulations for the area where the proposed fill or removal is to take place or can be conditioned on a future local approval to meet this criterion;
- Whether the proposed fill or removal is for streambank protection; and
- Whether the applicant had provided all practical mitigation to reduce the adverse effects of the proposed fill or removal. If off-site compensatory wetland mitigation is proposed, the applicant must document the impracticality of on-site compensatory wetland mitigation" (OAR 141-085-0565).

In Oregon, the DSL wetland specialists review wetland delineations and reports, which must include specific methodology and formatting to be accepted; the DSL has 120 days to review the wetland delineation reports following submittal of the report and required fees. On report and delineation approval, the DSL issues a Jurisdictional Determination valid for 5 years. Local jurisdictions must submit a Wetland Land-Use Notice to the DSL within 5 days of receiving a land-use application on a parcel with wetlands. The DSL then responds to the local jurisdiction and applicant.

Four permits are available from the DSL for work within waters of the State of Oregon, including individual permits, general authorizations, general permits, and emergency permits. Individual permits are used for projects with more than minimal impacts to wetlands or waterways and that do not qualify for general authorizations or permits. As previously stated, it is anticipated that the B2H Project will require an individual permit. Timelines for processing individual permits from the DSL are divided into the following four steps.

1. The first step is the application review, when the DSL has 30 days to conduct the review and issue a letter documenting the completeness or lack thereof.
2. Following the acceptance of a complete application, a public review period of 30 days is required. A notice detailing the Project is sent to other agencies, adjacent property owners, and any others expressing an interest in the Project inviting comment on the application.
3. During the final 60-day review period, the applicant may respond to comments received in the public review process, submit additional information, or revise the project.
4. Following the final review period, the DSL either issues or denies the permit. If needed, the applicant may request an extension of the permit decision to resolve outstanding issues. Permits are valid for up to 5 years from the date of issuance.

Oregon Energy Facility Siting Council

Oregon EFSC requires the submittal of a removal-fill permit. Issuance of the removal-fill permit occurs following the receipt of a complete application; DSL staff coordinates with EFSC during the permitting process.

State of Idaho

Idaho Department of Water Resources and Department of Lands

The IDWR and the IDL review applications in concert with USACE review. It typically takes about 60 days for an application to be reviewed and a permit issued after receiving all necessary information. For USACE-specific regulations, permit timelines and the process follows those previously described under the federal process and timelines.

3.2.2.3 Issues Identified for Analysis

Water Resources

- Would ground-disturbing activities affect surface waters, including water quality, quantity, and hydrologic behavior of surface waters?
- Would project construction, operations, and maintenance affect groundwater levels, contamination, or ability to recharge (especially as it relates to potential blasting)?
- Could the project affect drinking water?
- Could the loss of riparian vegetation affect stream temperature?
- Would National or Oregon scenic waterways be affected?
- Are there wetlands in the project area?
- Would there be any negative impacts on wetlands?
- What will the project's effects be on water quality?
- Does IPC need to acquire water rights for the project? If so, from where?
- Will post-construction stormwater runoff have impacts?

3.2.2.4 Methodology

Water Resources and Floodplains

The general analysis area for characterizing water resources and floodplains extends 0.5 mile on each side of the centerline of the Proposed Action and alternatives. Where new roads or existing roads needing improvement fall outside the mile wide analysis area, the analysis area includes 50 feet on each side of the centerline of the road. Substations, communication stations, staging areas, and fly yards that fall outside the mile wide analysis area were also analyzed to a point 50 feet from the facility boundary.

SURFACE WATER

Waterbodies

The U.S. Geological Survey National Hydrography Dataset (NHD) was used to evaluate the number of surface waterbodies that would be crossed by the proposed B2H Project and alternatives. The surface waterbodies that would be crossed are streams, artificial drainage paths, and human-made canals or ditches. There are no lakes within 0.5 mile of the Proposed Action or alternatives.

Stream classification information and crossing types are preliminary at this time and would be specified during final engineering design. In the analysis area, the NHD classifies natural streams as perennial or intermittent (including ephemeral). Perennial streams contain water throughout the year except during periods of drought. Intermittent streams contain water for extended periods but only at certain times of the year, such as when a stream receives seasonal flow from springs or melting snow. The NHD dataset also counted human-made canal ditches and other artificial paths.

Field investigations along the proposed B2H Project alignment indicated that the NHD layer overestimates flow. An estimated 70 percent of sampled proposed crossings are ephemeral, while NHD defines less than 1 percent of proposed crossings as ephemeral. Ephemeral streams are very small and generally flow only during large rainfall events. Additionally, some NHD-mapped streams do not exist on the ground.

Diversions

Geospatial data for Idaho and Oregon was reviewed to evaluate surface water diversions within 1 mile of the Proposed Action and alternatives. The analysis area was overlaid on the combined GIS data file for surface water diversions, and the number of diversions was counted by county. Most diversions are for irrigation, and some may be potable water sources.

303(d) Listed Waterbodies

CWA 303(d) listed impaired waterbodies were obtained from GIS files available from IDEQ's and ODEQ's websites. Because increases in sediment delivery and temperature are the most likely project impacts on water quality, the analysis evaluated stream segments identified on the 303(d) list as already impaired due to either sedimentation (sediment-impaired streams) or high temperatures (temperature-impaired streams). Several sediment and temperature TMDLs have been established for surface waters in Oregon and Idaho.

To quantify the number of temperature- and sediment-impaired waterbodies by county, the analysis area was compared to the combined GIS database for impaired waterbodies, and the number of impaired waterbodies was counted for sediment impairment and temperature impairment.

Surface Water Drinking Water Source Areas

The ODEQ website was searched to identify locations of surface water drinking water source areas in Oregon. These features are not mapped in Idaho. The GIS file of the analysis area was combined with the GIS file from the ODEQ database showing drinking water sources. The acreage of surface water drinking water source areas within the analysis area was calculated by county and presented as a percentage of the total analysis area.

Floodplains and Flood Hazards

Federal Emergency Management Agency (FEMA) data and the Office of Pipeline Safety (OPS) *National Disaster Study, National Pipeline Risk Index Technical Report* (1996) were used to evaluate the flood hazard rankings for the analysis area. The OPS data provide flood hazard rankings for the United States, including those portions of Oregon and Idaho near the B2H Project. To evaluate areas where flood risks may occur, the OPS GIS data file for flood risks was used to determine the areas of medium and high flood risks within the analysis area. The area (in acres) of medium and high flood risk within the analysis area was calculated and expressed as a percentage of the analysis area by county.

Groundwater

Shallow Groundwater

The Natural Resource Conservation Service (NRCS) Soil Survey Geographic (SSURGO) databases were used to identify shallow groundwater within the analysis area. Shallow groundwater may complicate construction of footings of transmission line towers, which could require foundations as deep as 40 feet. Because only 6 of the 1,375 structures currently planned involve depths greater than 30 feet, and less than 5 percent of planned structures would reach 30 feet, the cutoff for shallow groundwater was defined as 30 feet from the ground surface. To identify the existing shallow depth to groundwater conditions in the analysis area, the GIS file of the analysis area was overlaid on the GIS files from the SSURGO databases. Everywhere in the analysis area, depths to groundwater are greater than 30 feet.

Groundwater Drinking Water Source Areas

The ODEQ website was searched to identify locations of groundwater drinking water source areas and groundwater 2-year time-of-travel zones for drinking water source areas in Oregon. These features are not mapped in Idaho. To identify the Proposed Action and alternatives located within these features, the GIS file of the analysis area was combined with the GIS file from the ODEQ database showing these drinking water sources. The acreage of groundwater drinking water source areas within each county of the analysis area was calculated.

Water Wells

IDWR and ODWR databases were used to identify water wells within the analysis area. IDWR includes permitted wells, water-level monitoring wells, and shallow and deep injection wells in their database, while ODWR includes water-level monitoring wells only. As a result, the density of wells mapped by IDWR is much greater than the density mapped by ODWR. The GIS file of the analysis area was combined with the Oregon and Idaho well GIS files. The number of water wells was determined by county. To compare the number of wells between the proposed B2H Project and the alternatives, the numbers of wells within the 1-mile buffer area were counted by alternative.

Shallow bedrock within the analysis area could require blasting to set foundations or create new access roads. Blasting in shallow bedrock could damage nearby structures, including water wells. Wells within 200 feet of the blasting areas could be especially susceptible to damage. To assess the number of water wells within 200 feet of potential blasting zones, the GIS file with well locations was combined with GIS for areas of shallow bedrock, where blasting or drilling may be required. The resulting GIS file was then combined with the GIS file of the analysis area. The number of wells in shallow bedrock within 200 feet of the Proposed Action and alternative centerlines or within 200 feet of new roads was determined. The wells in shallow bedrock within 200 feet of centerline or new roads between the comparable portion of the Proposed Action and alternatives were then counted.

Sole Source Aquifers

The EPA Region 10 website was searched to identify locations of sole source aquifers in the analysis area.

WETLANDS

The analysis area for wetlands consists of a 0.5-mile on either side of the Proposed Action and the alternative centerlines; a minimum of 50 feet on either side of the centerlines of access roads mapped for the Proposed Action and alternatives; and a minimum of 50 feet around the perimeter of other project features, such as staging areas, laydown yards, fly yards, substations, and communication sites and roads. The analysis area for wetlands, based on preliminary or indicative engineering, includes approximately 283,831 acres.

To determine the acreage of impacts that could potentially occur to wetlands, the proposed Project's disturbance footprint was combined with the wetland areas identified by the 2009 Oregon Wetland Cover dataset from the Oregon Biodiversity Information Center (previously known as the Oregon Natural Heritage Information Center) and The Wetlands Conservancy, along with those areas identified by the National Wetland Inventory (NWI) database for the portions of the B2H Project located in Oregon and in Idaho. Areas where construction or operations footprints were co-located with mapped wetlands were considered a direct impact and the acreage of impact was calculated via GIS analysis.

The estimates of impacts determined through these methods are based on preliminary engineering. As a result, the impacts that would actually occur from construction and operations are overestimated because components (including towers, roads, equipment storage yards, fly yards, and laydown areas) would be sited outside of wetland areas whenever possible (as is a standard engineering practice). In addition, the estimated impacts resulting from tower pads are determined via a standard circular buffer around the proposed pad location. However, construction engineers are unlikely to impact the entire extent of this circular buffer when wetlands or riparian areas are present, but would, instead reshape the construction area around the tower pad to exclude wetland areas. These impact estimates are presented here as they are based on the current preliminary design of the B2H Project. Avoidance of wetlands and implementing design features listed in Appendix C would likely further reduce the impact to wetlands.

3.2.2.5 Affected Environment

The affected environment for water resources is described for the B2H Project area as a whole. To the extent there are notable differences in the affected water resources between the project segments or among the alternatives, those differences are addressed in the Environmental Consequences section.

Water Resources and Floodplains

This section describes the existing condition of water resources and floodplains in the vicinity of the Proposed Action and alternatives and the potential environmental consequences of the Proposed Action and alternatives. Water resources issues considered in this section include surface water quality; surface water quantity (stream flow); groundwater quality and quantity; and drinking water quality (surface and groundwater). In addition, information about surface water diversions and water-quality-impaired streams in the vicinity of the Proposed Action and alternatives has been included. The analysis area for water resources extends 0.5 mile on each side of the centerline of the Proposed Action and alternatives.

In addition to the perennial (flow year-round) streams and rivers in the B2H Project area, the analysis area contains a number ephemeral (only flow during large rainfall events) or intermittent (only flow part of the year) streams. These rivers and streams drain to several major watersheds that ultimately drain to the Columbia River, as shown in Figure 3-5. From northwest to southeast, the affected watersheds are the Middle Columbia and Lower Snake sub-basins in Oregon and the Middle Snake sub-basin in Oregon and Idaho. Subbasins and watersheds are assigned hydrologic unit codes (HUCs); sub-basins are identified by a four-digit HUC, while watersheds are identified by an eight-digit HUC (that is, the basin HUC plus a four-digit identifier). The Middle Snake Basin is assigned HUC 1705; the Lower Snake Basin, HUC 1706; and the Middle Columbia Basin, HUC 1707. In portions of the Middle Snake Basin in Oregon and Idaho, surface water from natural drainages is extensively diverted into canals and drainage ditches for flood irrigation of cropland. There are no lakes within the 0.5-mile analysis area.

Surface Water

Waterbodies

The NHD was used to evaluate the number of surface waterbodies that would be crossed by the Proposed Action and alternatives. Approximately 1,321 miles of streams are present in the analysis area. No ponds or lakes were identified within 0.5 mile of the Proposed Action or alternative centerlines.

Table 3-19 presents the miles of streams, miles of 303(d) listed streams, number of surface water diversions, acres of medium to high flood risk, and acres of surface water drinking sources by county and landownership in the analysis area.

Diversions

A total of 650 surface water diversions were identified within 0.5-mile analysis area (Table 3-19). Most of these diversions are used for irrigation and livestock watering. Others are used to support aquatic life and wildlife or to provide water for fire protection, road construction, or groundwater recharge.

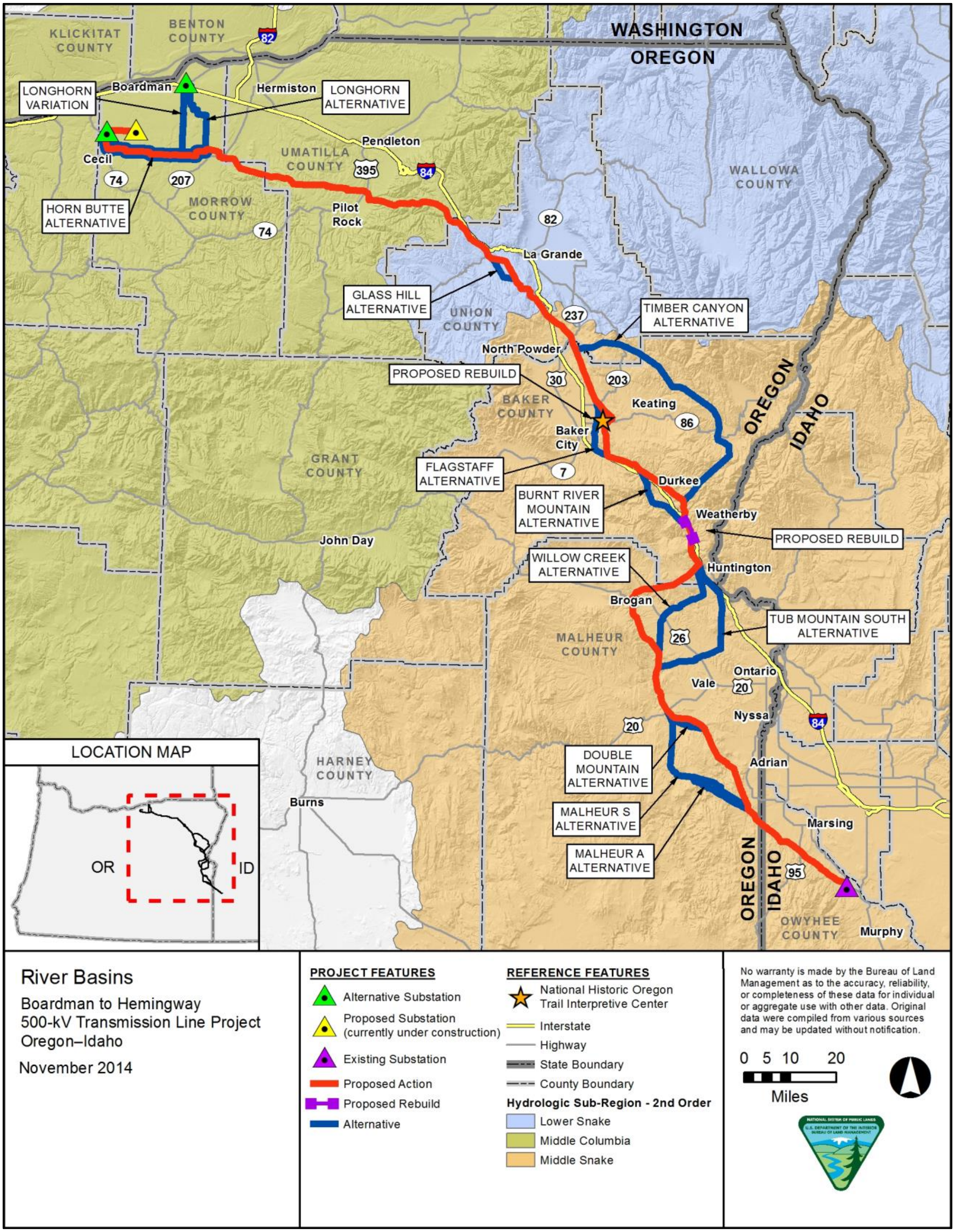

Figure 3-5. River Basins

303(d) Listed Waterbodies

CWA 303(d) listed impaired waterbodies were obtained from files available from IDEQ's and ODEQ's websites. Streams within the analysis area identified on the 303(d) list for impaired water quality due to high levels of sediment or elevated temperature are listed in Table 3-20, and subbasins in the analysis area with TMDLs for sediment and temperature are listed in Table 3-21. A total 9 identified streams in Baker County (Burnt River, Dixie Creek, Lawrence Creek, and Powder River), Malheur County (Owyhee River), Morrow County (Willow Creek), Umatilla County (Birch Creek), and Union County (Powder River and Rail Creek) are listed because of elevated water temperature. A total of 17 identified streams in Owyhee County (Hardtrigger Creek, Jump Creek, Poison Creek, Sage Creek, South Canal, and 9 unnamed streams) and Umatilla County (Beaver Creek, Little Beaver Creek, and Rail Creek) are listed for high sediment levels. The Grande Ronde River and Meacham Creek in Union County are on the 303(d) list for impairment from both sediment and temperature.

Surface Water Drinking Water Source Areas

One surface water drinking water source area crosses both Umatilla and Union Counties in the analysis area (Table 3-19). Water for the city of Pendleton (located in central Umatilla County, Oregon) comes from the Umatilla River, as well as from several groundwater wells (ODEQ 2003). Sensitive areas within the city of Pendleton drinking water protection area have high soil permeability, high soil erosion potential, or occur within 1,000 feet of the Umatilla River or tributary streams (ODEQ 2003).

Table 3-19. Surface Water Resources in the Analysis Area by County and Ownership

County	Ownership	Streams (miles)	303(d) Listed Streams for Sediment (miles)	303(d) Listed Streams for Temperature (miles)	Number of Diversions	Medium or High Flood Risk (acres)	Surface Drinking Water Source (acres)
Morrow (Oregon)	BLM	0.4	0.0	0.0	0	0.0	0.0
Morrow (Oregon)	Department of Defense	0.0	0.0	0.0	0	0.0	0.0
Morrow (Oregon)	Bureau of Reclamation	2.6	0.0	0.0	0	0.0	0.0
Morrow (Oregon)	Private	110.6	0.0	3.1	57	2,604.2	0.0
Umatilla (Oregon)	Department of Defense	0.0	0.0	0.0	0	0.0	0.0
Umatilla (Oregon)	Indian Reservation	0.1	0.0	0.0	0	6.5	0.0
Umatilla (Oregon)	Private	99.1	5.3	1.5	69	1,919.8	2,939.1
Umatilla (Oregon)	State	0.0	0.0	0.0	0	0.0	0.0
Union (Oregon)	BLM	0.6	0.0	0.0	0	0.0	0.0
Union (Oregon)	Bureau of Reclamation	0.6	0.0	0.0	0	0.0	0.0
Union (Oregon)	Private	138.9	1.5	7.3	81	303.6	188.3
Union (Oregon)	State	1.2	0.6	1.2	2	38.1	0.0

County	Ownership	Streams (miles)	303(d) Listed Streams for Sediment (miles)	303(d) Listed Streams for Temperature (miles)	Number of Diversions	Medium or High Flood Risk (acres)	Surface Drinking Water Source (acres)
Union (Oregon)	USFS	36.9	0.0	0.0	39	118.1	0.0
Baker (Oregon)	BLM	56.4	0.0	0.5	53	3,539.4	0.0
Baker (Oregon)	Private	253.4	0.0	19.4	184	8,267.5	0.0
Baker (Oregon)	State	6.0	0.0	0.0	0	0.0	0.0
Baker (Oregon)	USFS	51.9	0.0	0.0	13	549.5	0.0
Malheur (Oregon)	BLM	336.5	0.0	4.1	62	7,070.9	0.0
Malheur (Oregon)	Bureau of Reclamation	21.6	0.0	0.1	0	145.5	0.0
Malheur (Oregon)	Private	146.8	0.0	0.1	38	5,404.6	0.0
Malheur (Oregon)	State	0.6	0.0	0.0	0	0.0	0.0
Owyhee (Idaho)	BLM	37.9	9.6	0.0	13	1,572.1	0.0
Owyhee (Idaho)	Bureau of Reclamation	1.9	0.2	0.0	0	0.0	0.0
Owyhee (Idaho)	Private	9.0	2.6	0.0	37	567.7	0.0
Owyhee (Idaho)	State	8.2	4.1	0.0	2	0.0	0.0
Total Analysis Area		1,321.4	23.8	37.3	650	32,107.5	3,127.4

Table 3-20. Named 303(d) Listed Streams in the Analysis Area

County	Stream Name	Listed for Sediment	Listed for Temperature	County	Stream Name	Listed for Sediment	Listed for Temperature
Morrow (Oregon)	Willow Creek		Yes	Baker (Oregon)	Burnt River		Yes
Umatilla (Oregon)	Beaver Creek	Yes		Baker (Oregon)	Dixie Creek		Yes
Umatilla (Oregon)	Birch Creek		Yes	Baker (Oregon)	Lawrence Creek		Yes
Umatilla (Oregon)	Little Beaver Creek	Yes		Baker (Oregon)	Powder River		Yes
Umatilla (Oregon)	Meacham Creek	Yes	Yes	Malheur (Oregon)	Owyhee River		Yes
Umatilla (Oregon)	Rail Creek	Yes		Owyhee (Idaho) [1]	Hardtrigger Creek	Yes	
Union (Oregon)	Grande Ronde River	Yes	Yes	Owyhee (Idaho) [1]	Jump Creek	Yes	
Union (Oregon)	Meacham Creek	Yes	Yes	Owyhee (Idaho) [1]	Poison Creek	Yes	

County	Stream Name	Listed for Sediment	Listed for Temperature	County	Stream Name	Listed for Sediment	Listed for Temperature
Union (Oregon)	Powder River		Yes	Owyhee (Idaho) [1]	Sage Creek	Yes	
Union (Oregon)	Rock Creek		Yes	Owyhee (Idaho) [1]	South Canal	Yes	

Table Note: [1] In addition to the 5 named streams in Owyhee County, ID, there are 9 unnamed 303(d) listed streams, all of which are listed for sediment.

Table 3-21. Subbasins in the Analysis Area with Total Maximum Daily Loads for Sediment and Temperature

County	Subbasin Name	HUC	TMDL Status	Sediment [1]	Temperature [1]
Morrow (Oregon)	Middle Columbia-Lake Wallula	17070101	No 303(d) listings		
Morrow (Oregon)	Umatilla	17070103	EPA approved	X	X
Morrow (Oregon)	Willow	17070104	EPA approved		X
Umatilla (Oregon)	Umatilla	17070103	EPA approved	X	X
Umatilla (Oregon)	Upper Grande Ronde	17060104	EPA approved	X	X
Union (Oregon)	Powder	17050203	TMDL initiated	X	X
Union (Oregon)	Umatilla	17070103	EPA approved	X	X
Union (Oregon)	Upper Grande Ronde	17060104	EPA approved	X	X
Baker (Oregon)	Brownlee Reservoir	17050201	TMDL initiated	X	X
Baker (Oregon)	Burnt	17050202	TMDL initiated	X	X
Baker (Oregon)	Powder	17050203	TMDL initiated	X	X
Baker (Oregon)	Willow	17050119	EPA approved		X
Malheur (Oregon)	Brownlee Reservoir	17050201	TMDL Initiated	X	X
Malheur (Oregon)	Bully	17050118	EPA approved		X
Malheur (Oregon)	Lower Malheur	17050117	EPA approved		X
Malheur (Oregon)	Lower Owyhee	17050110	TMDL not started		X
Malheur (Oregon)	Middle Snake-Succor	17050103	EPA approved	X	X
Malheur (Oregon)	Willow	17050119	EPA approved		X
Owyhee (Idaho)	Middle Snake-Succor	17050103	EPA approved	X	X

Table Abbreviations: EPA = Environmental Protection Agency; HUC = hydrologic unit code; TMDL = total maximum daily load.

Table Note: [1] X denotes TMDLs have been established.

Floodplains and Flood Hazards

Federal Emergency Management Agency (FEMA) data and the Office of Pipeline Safety (OPS) *National Disaster Study, National Pipeline Risk Index Technical Report* (1996) were used to evaluate the flood hazard rankings. The OPS data provide flood hazard rankings for the United States, including those portions of Oregon and Idaho near the B2H Project. Soil type and flooding risk (based on FEMA mapping) were used to produce flood hazard rankings from 0 to 100, where 0 represents the lowest flood hazard and 100 represents the highest. Flood hazard rankings of 85 to 100 represent a high risk from flooding, rankings of 70 to 84 represent a medium risk, and rankings less than 70 represent a low risk. An estimated 32,108 acres within the analysis area is identified as having a medium or high flood risk (Table 3-19).

Some of the streams that the Proposed Action would cross have delineated 100-year floodplains or flood hazard areas designated by FEMA. The 100-year floodplain is the area that would be inundated by a flood event having a 1 percent chance of being equaled or exceeded in any given year (also referred to as the 100-year flood).

Areas within the analysis area that have been identified as having moderate and high flood hazard include:

- Willow Creek (near Cecil, Oregon) and Sixmile Canyon and tributaries (between Cecil and Boardman, Oregon) in Morrow County;
- Butter Creek and tributaries (Pine City and Hermiston, Oregon) in Morrow and Umatilla Counties;
- Alkali Canyon (upstream of Echo, Oregon) in Umatilla County, Birch and McKay creeks (between Pilot Rock and Pendleton, Oregon), the Grande Ronde River (near La Grange, Oregon);
- Powder River tributaries (near Baker, Oregon), Burnt River and tributaries (near Pleasant Valley, Durkee, Weatherby, Dixie, Lime, and Huntington, Oregon) in Baker County;
- Willow Creek (near Brogan, Oregon), Malheur River (near Vale, Oregon), and Owyhee River (upstream of Owyhee, Oregon) in Malheur County; and
- Several tributaries of the Snake River (between Marsing and Melba, Idaho) in Owyhee County.

Building is permitted in flood-prone areas with certain restrictions. For instance, buildings may be elevated such that the lowest floor is above the 100-year flood level, and an area of the watercourse (the floodway) is typically set aside for flow conveyance. Since floodplain mapping is usually done as an aid to local governments in urban areas or in areas that are expected to be prone to urbanization, most watercourses in non-urban areas are unmapped even though they may be subject to flood hazards. It is reasonable to assume that all watercourses that convey natural flows, whether or not mapped as floodplains or flood hazard areas, present some level of flood hazard. The flood hazard is not limited to inundation; bank erosion and bed scour (a lowering or destabilization of the channel bed during a flow event) are also hazards that can occur due to flooding.

GROUNDWATER

Shallow Groundwater

The NRCS Soil Survey Geographic databases were used to identify shallow groundwater. Groundwater occurs in several major aquifers throughout the analysis area. Northeastern Oregon is underlain by the southern portion of the Columbia Plateau aquifers, and central-eastern Oregon is underlain by the Pacific Northwest aquifers. Southwestern Idaho is underlain by the Snake River Plain aquifer. Shallow groundwater can occur above the regional aquifers, usually from infiltration from surface water sources. In agricultural areas in the Middle Snake Subbasin, the quantity of shallow groundwater may be enhanced by the flood irrigation. Throughout the analysis area, depth to groundwater exceeds 30 feet.

Groundwater Drinking Water Source Areas

Groundwater is the major drinking water source in southern Idaho, and a combination of surface water and groundwater provides drinking water in eastern Oregon. The ODEQ website was searched to identify locations of groundwater drinking water source areas and groundwater 2-year time-of-travel zones for drinking water source areas in Oregon. These features are not mapped in Idaho.

The analysis area crosses several groundwater drinking water source areas, predominantly in Baker County and to a lesser extent in Union County (Table 3-22). These source areas include Blue Bucket RV Park, City of Huntington, Oregon Department of Transportation Weatherby Rest Area, Oregon Parks and Recreation Department Hilgard Junction State Park, Oregon Youth Authority Hilgard, Portland General Electric Boardman Coal Fire Plant, and U.S. Army Depot-Umatilla (Admin and North).

Water Wells

A total of 59 groundwater wells were identified in the analysis area (Table 3-22). The wells identified from the IDWR database include permitted wells, water-level monitoring wells, and shallow and deep injection wells. The ODWR database only includes water-level monitoring wells.

Shallow bedrock within the analysis area could require the use of blasting to set foundations or create new access roads. Wells within 200 feet of potential blasting areas, wells in shallow bedrock within 200 feet of the Proposed Action and alternative centerlines, and wells within 200 feet of proposed new roads are summarized in Table 3-23.

Sole Source Aquifers

The sole source aquifers nearest to the analysis area are the Lewiston Basin Aquifer (in southeastern Washington and western Idaho) and the Eastern Snake River Plain Aquifer (along the Snake River in south-central and southeastern Idaho). No sole source aquifers were identified within the analysis area.

Table 3-22. Groundwater Resources and Wells in the Analysis Area

County	Groundwater Drinking Water Source Areas (acres)	Total Number of Wells [1]
Morrow (Oregon)	0	22
Umatilla (Oregon)	139	9
Union (Oregon)	117	1
Baker (Oregon)	8,319	0
Malheur (Oregon)	84	1
Owyhee (Idaho)	0	26
Total Analysis Area	8,659	59

Table Notes: [1] Idaho Department of Water Resources includes permitted wells, water-level monitoring wells, and shallow and deep injection wells in its database; Oregon Department of Water Resources includes water-level monitoring wells only.

Table 3-23. Wells within 200 feet of Structures or Roads Potentially Requiring Blasting or Drilling

Route Name	County	Route Length (miles)	Number of Wells [1]	Number of Surface Water Diversions
Proposed Action and Grassland Substation	Morrow (Oregon)	46.8	2	0
Proposed Action	Umatilla (Oregon)	49.5	0	5
Proposed Action	Union (Oregon)	39.8	0	6
Proposed Action	Baker (Oregon)	69.2	0	11
Proposed Action	Malheur (Oregon)	72.0	0	4
Proposed Action and Hemingway Substation	Owyhee (Idaho)	23.8	4	6
Proposed 138/69-kV Rebuild	Baker (Oregon)	5.3	0	1
Total Proposed Action		306.3	6	33
Comparison of Proposed Action and Alternatives				
Proposed Action compared to Horn Butte Alternative	Morrow (Oregon)	34.1	2	0
Horn Butte Alternative	Morrow (Oregon)	27.5	2	0
Proposed Action compared to Longhorn Alternative and Longhorn Variation	Morrow (Oregon)	34.1	2	0
Longhorn Alternative	Morrow (Oregon)	18.4	1	2
Longhorn Variation	Morrow (Oregon)	22.4	2	1
Proposed Action compared to Glass Hill Alternative	Union (Oregon)	7.5	0	0
Glass Hill Alternative	Union (Oregon)	7.5	0	1
Proposed Action compared to Timber Canyon Alternative	Baker (Oregon)	46.3	0	8
Timber Canyon Alternative	Union/Baker (Oregon)	61.5	0	9
Proposed Action compared to Flagstaff Alternative	Baker (Oregon)	14.2	0	0
Flagstaff Alternative, including 230-kV rebuild	Baker (Oregon)	15.1	0	0
Proposed Action compared to Burnt River Mountain Alternative	Baker (Oregon)	16.8	0	4
Burnt River Mountain Alternative	Baker (Oregon)	16.8	0	16
Proposed Action compared to Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.2	0	5
Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.6	0	4
Proposed Action compared to Willow Creek Alternative	Baker/Malheur (Oregon)	30.2	0	5
Willow Creek Alternative	Baker/Malheur (Oregon)	24.6	0	6

Route Name	County	Route Length (miles)	Number of Wells [1]	Number of Surface Water Diversions
Proposed Action compared to Malheur S Alternative	Malheur (Oregon)	30.5	0	3
Malheur S Alternative	Malheur (Oregon)	33.6	0	0
Proposed Action compared to Malheur A Alternative	Malheur (Oregon)	30.5	0	3
Malheur A Alternative	Malheur (Oregon)	33.2	0	0
Proposed Action compared to Double Mountain Alternative	Malheur (Oregon)	7.4	0	1
Double Mountain Alternative	Malheur (Oregon)	7.4	0	0

Table Note: [1] The Idaho Department of Water Resources includes permitted wells, water-level monitoring wells, and shallow and deep injection wells in its database; Oregon Department of Water Resources includes water-level monitoring wells only.

WETLANDS

The analysis area for wetlands includes 283,831 acres. Approximately 0.5 percent of this area contains previously mapped wetlands. Existing information indicates three types of wetlands were mapped in the analysis area. Wetland types are classified by the dominant vegetation type and vegetation structure as defined by the Cowardin system (Cowardin et al. 1979; used by the NWI to classify wetlands). These wetland types are further defined below. Table 3-24 includes the acres of wetlands in the analysis area by county, land ownership and Cowardin vegetation type. Baker County has the largest acreage of wetlands in the analysis area. This corresponds to the portion of the analysis area within the Powder River Valley area where there is a concentration of wetlands. Owyhee County has the least acreage of wetlands.

Table 3-24. Existing Wetland Types within the Analysis Area by County and Land Ownership (acres)

County	Land Ownership	Emergent Wetlands	Scrub-Shrub Wetlands	Forested Wetlands	Total Wetlands
Morrow (Oregon)	Private	23.0	0	0	23.0
Umatilla (Oregon)	Tribal	0	0.1	0	0.1
Umatilla (Oregon)	Private	16.5	11.5	3.2	31.2
	Umatilla Total	16.5	11.6	3.2	31.3
Union (Oregon)	Private	146.2	37.5	4.5	188.2
Union (Oregon)	State	1.2	0	0	1.2
Union (Oregon)	USFS	7.7	0	0	7.7
	Union Total	155.1	37.5	4.5	197.1

County	Land Ownership	Emergent Wetlands	Scrub-Shrub Wetlands	Forested Wetlands	Total Wetlands
Baker (Oregon)	BLM	19.1	8.9	3.8	31.8
Baker (Oregon)	Private	932.3	64.3	80.2	1,076.8
Baker (Oregon)	State	0.6	1.2	3.0	4.9
Baker (Oregon)	USFS	10.8	8.9	11.7	31.4
Baker Total		962.8	83.3	98.7	1,144.8
Malheur (Oregon)	BLM	40.0	21.5	3.2	64.7
Malheur (Oregon)	Bureau of Reclamation	8.5	3.1	0	11.6
Malheur (Oregon)	Private	133.8	11.2	10.7	155.7
Malheur (Oregon)	State	8.3	11.8	0	20.1
Malheur Total		190.6	47.6	14.0	252.2
Owyhee (Idaho)	BLM	1.0	0	0	1.0
Owyhee (Idaho)	Private	0.0	0	0	0.0
Owyhee Total		1.0	0	0	1.0
Total Acreage within the Analysis Area		1,349.1	180.0	120.3	1,649.4

Emergent Wetlands

Emergent wetlands ("palustrine emergent" in the 1979 Cowardin system) are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens defined by the lack of significant shrub or tree cover. This wetland type is variable and can occur over a variety of locales, including arid-climate ephemeral depressions, farmed wetlands in agricultural areas, and wet meadows. Vegetation is also variable based on the locale but includes species adapted to prolonged inundation or soil saturation. Vegetation found in emergent wetlands includes grasses, sedges, rushes, and other forbs adapted to wet conditions. Common species in emergent wetlands may include reed canarygrass (*Phalaris arundinacea*), Baltic rush (*Juncus balticus*), bull rush (*Scirpus acutus*), and cattail (*Typha latifolia*).

A total of 1,349.1 acres of emergent wetlands are present in the analysis area; emergent wetlands are the most common wetland type and comprise 82 percent of the wetland acreage. Baker County has 962.8 acres of emergent wetlands, almost four times the emergent wetland acreage of any other county in the analysis area. Union County also has a large amount (155.1 acres) of emergent wetlands.

Scrub-Shrub Wetlands

Scrub-shrub wetlands ("palustrine scrub-shrub" in the 1979 Cowardin system) are identified by the dominance of woody vegetation less than 20 feet tall that may include shrubs and sapling trees. A scrub-shrub dominated wetland has at least 30 percent cover of shrubs as the tallest vegetation layer. This wetland type can also occur over wide elevation ranges. Scrub-shrub wetlands in the analysis area often include red-osier dogwood (*Cornus stolonifera*), hawthorn (*Crataegus* spp.), Woods' rose (*Rosa woodsii*), golden currant (*Ribes aureum*), Douglas' spiraea (*Spiraea douglasii*), and willow (*Salix* spp.).

Scrub-shrub wetlands are the second-most-common wetland type in the analysis area, totaling 180 acres. The majority of scrub-shrub wetlands are located in Baker (83.3 acres) and Malheur (47.6 acres) counties.

FORESTED WETLANDS

Forested wetlands ("palustrine forested" in the 1979 Cowardin system) are identified by the dominance of woody vegetation that is more than 20 feet tall with greater than 30% cover. Common species found in forested wetlands in the analysis area may include black cottonwood (*Populus trichocarpa*), quaking aspen (*Populus tremuloides*), Engelmann spruce (*Picea engelmannii*), and species of willow. A total of 120.3 acres of forested wetlands are present in the analysis area. Almost all of the forested wetlands (98.7 acres) are located in Baker County.

3.2.2.6 ENVIRONMENTAL CONSEQUENCES

CRITERIA FOR ASSESSING INTENSITY OF IMPACTS

Criteria were developed to assess the intensity of a potential effect on water resources and wetlands associated with implementation of the B2H Project (Table 3-25). Criteria were developed to assess the intensity of potential effects from construction, operation, and maintenance of the project. Criteria focused on the abundance of a particular resource; the potential for damage to or long-term loss of water and wetland resources; federal and state statutes applicable to water and wetland resources; and the varying degree of an importance a particular water resource has to the greater ecosystem.

Table 3-25. Criteria for Assessing Intensity of Impacts on Water Resources

Intensity of Impacts	Description
High	• Project activities that result in a long-term loss of wetland function • Project activities that impact springs or wells • Placement of tower foundations in areas of shallow groundwater or aquifers • Project activities that result in a long-term increase of sedimentation to nearby surface-water resources
Moderate	• Project activities that result in permanent fill in wetlands • Project activities that result in short-term increases in sedimentation to nearby surface-water resources
Low	• Project activities that result in short-term disturbance to wetlands • Project activities that result in infrequent periodic increases in sedimentation to nearby surface-water resources

NO ACTION ALTERNATIVE

Under the No Action alternative, no direct or indirect effects on surface water or groundwater resources would occur as a result of the Proposed Action and alternatives. In addition, the risk of flooding in the analysis area would not change.

EFFECTS COMMON TO ALL ALTERNATIVES

SURFACE WATER

Surface Water Drinking Water Source Areas

For the Proposed Action and alternatives, approximately 127 acres of ground disturbance would occur in surface water drinking water source areas (Table 3-26). IPC would comply with all applicable land use and management requirements for activities in surface water drinking water source areas.

Table 3-26. Potential Construction Disturbance in Areas of Flood Hazard Risk and Drinking Water Source Areas

Route Name	County	Route Length (miles)	Medium to High Flood Risk (acres)	Surface Water Drinking Water Source (acres) [1]	Groundwater Drinking Water Source (acres) [2]
Proposed Action and Grassland Substation	Morrow (Oregon)	46.8	87.8	0.0	0.0
Proposed Action	Umatilla (Oregon)	49.5	59.8	121.7	117.0
Proposed Action	Union (Oregon)	39.8	11.2	4.8	55.4
Proposed Action	Baker (Oregon)	69.2	244.5	0.0	57.5
Proposed Action	Malheur (Oregon)	72.0	120.8	0.0	0.0
Proposed Action and Hemingway Substation	Owyhee (Idaho)	23.8	111.9	0.0	0.0
Proposed 138/69-kV Rebuild	Baker (Oregon)	5.3	51.0	0.0	6.7
	Total Proposed Action	306.3	687.1	126.5	236.6
Comparison of Proposed Action and Alternatives					
Proposed Action Compared to Horn Butte Alternative	Morrow (Oregon)	34.1	56.9	0.0	0.0
Horn Butte Alternative	Morrow (Oregon)	27.5	56.9	0.0	0.0
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow (Oregon)	34.1	56.9	0.0	0.0
Longhorn Alternative	Morrow (Oregon)	18.4	0.0	0.0	117.0
Longhorn Variation	Morrow (Oregon)	22..4	0.0	0.0	117.0
Proposed Action Compared to Glass Hill Alternative	Union (Oregon)	7.5	0.0	0.0	0.0
Glass Hill Alternative	Union (Oregon)	7.5	0.0	0.0	0.0
Proposed Action Compared to Timber Canyon Alternative	Union/Baker (Oregon)	46.3	52.1	0.0	55.4
Timber Canyon Alternative	Union/Baker (Oregon)	61.5	42.6	0.0	189.3
Proposed Action Compared to Flagstaff Alternative	Baker (Oregon)	14.2	30.0	0.0	0.0

Route Name	County	Route Length (miles)	Medium to High Flood Risk (acres)	Surface Water Drinking Water Source (acres) [1]	Groundwater Drinking Water Source (acres) [2]
Flagstaff Alternative including 230-kV Rebuild	Baker (Oregon)	15.1	30.8	0.0	0.0
Proposed Action Compared to Burnt River Mountain Alternative	Baker (Oregon)	16.8	90.2	0.0	10.7
Burnt River Mountain Alternative	Baker (Oregon)	16.8	40.6	0.0	6.3
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.2	50.7	0.0	38.5
Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.6	279.6	0.0	41.4
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur (Oregon)	30.2	44.7	0.0	20.8
Willow Creek Alternative	Baker/Malheur (Oregon)	24.6	130.0	0.0	30.7
Proposed Action Compared to Malheur S Alternative	Malheur (Oregon)	30.5	50.6	0.0	0.0
Malheur S Alternative	Malheur (Oregon)	33.6	51.1	0.0	0.0
Proposed Action Compared to Malheur A Alternative	Malheur (Oregon)	30.5	50.6	0.0	0.0
Malheur A Alternative	Malheur (Oregon)	33.2	52.3	0.0	0.0
Proposed Action Compared to Double Mountain Alternative	Malheur (Oregon)	7.4	0.0	0.0	0.0
Double Mountain Alternative	Malheur (Oregon)	7.4	0.0	0.0	0.0

Table Notes: [1] Surface water drinking water source areas include Umatilla River. [2] Groundwater drinking water source areas include Blue Bucket RV Park, City of Huntington, and ODOT Weatherby Rest Area.

Surface Waterbodies

Project construction, which includes the construction of access roads and substations, installation of towers and foundations, dust control, and construction of temporary and permanent stream crossings, would involve excavation, grading, removal of vegetation, and use of surface water. These activities have the potential for short-term impacts to water quality by increasing the potential for sedimentation and natural hydrological patterns such as stream flows.

Accidental Spills or Disposal of Harmful Materials

Construction activities would require use of a variety of vehicles, machinery, and chemicals. Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface water. Materials that could contaminate the construction area include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, cement slurry, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, or other toxic fluids. Downstream beneficial uses could be adversely affected if these chemicals enter the waterbodies.

Vegetation Removal

The construction of new roads, improvement of existing roads, and construction of other facilities (substations and communication sites) would result in disturbance and vegetation clearing of approximately 2,200 acres within 500 feet of streams within the analysis area (shown in Appendix B.2, Table B.2-2). Approximately 1,900 acres would be adjacent to intermittent streams and approximately 300 acres would be adjacent to perennial streams. Approximately 54 acres of forested riparian areas within 100 feet of streams would be disturbed.

In areas where the transmission line would cross forested areas, tree heights would have to be trimmed for safety and maintenance reasons. Long-term loss of vegetation and trees near streams and along the transmission line may cause a slight localized increase in surface water temperature because stream temperature in forested settings can be strongly influenced by the presence or absence of shade. Water temperature impacts would be greatest along small, slow-moving, and shallow waterbodies. Thinning or removal of vegetation within or adjacent to riparian areas could also contribute to long-term local increases in sedimentation.

Removal of vegetation and direct solar radiation can result in measurable local water temperature increases. As stream temperature is constantly striving to gain equilibrium with air temperature, the influence of direct solar radiation can be substantial. However, even though gaps in forest canopy cover can result in a local increase in water temperature, overall stream temperatures do not continue to increase because the warmed water moves into canopy cover downstream (Danehy et al. 2005).

The majority of stream crossings would occur in shrublands, outside of forested areas. Other factors being constant, stream temperatures in shrubland areas can be expected to be generally higher than those of forested areas, due to a lack of canopy cover. Shrub canopy cover is typically concentrated along the edges of a stream. Overhead sun imparts maximum solar radiation directly onto the deeper, middle portions of the stream. Approximately 54 acres of riparian vegetation would be disturbed during construction. Of that area, approximately 2 acres of riparian vegetation adjacent to temperature-impaired streams would be disturbed.

Stream Crossings

To facilitate vehicle and machinery access required to build the transmission line and associated facilities, the Proposed Action would require construction of 296 stream crossings (shown in Appendix B.2, Table B.2-1). Depending on final engineering design, additional temporary stream crossings may also be needed to access pulling/tensioning yards and other temporary construction sites. Stream classification information and site-specific crossing types and numbers are preliminary at this time and would be refined during final engineering design.

While the qualitative effects of the different types of road crossings on water quality would be the same regardless of the alternative, a larger or smaller number of crossings of intermittent and perennial streams would likely result in higher or lower exposures to the risk of adverse water quality effects on surface waters. Several alternatives suggest marked differences from the Proposed Action based on the number of anticipated stream crossings. The following two basic stream-crossing types would be considered:

- Type 2: drive-through ford crossing, which includes grading and base stabilization
- Type 3: culvert crossing, which includes installation of a stable road surface on top of the culvert for vehicle passage

Based on the available GIS information and current indicative engineering for the Proposed Action's access roads, the approximate number and type of stream crossings for the Proposed Action would be:

- 242 drive-through ford crossings of intermittent streams
- 44 culvert crossings of perennial streams
- 10 culvert crossings of canals and ditches

If constructing a new waterbody crossing is impractical or requires a bridge or a very large (greater than 48 inches in diameter) culvert, existing stream crossings would be used and access would be redesigned to avoid the need to construct a new crossing. Where possible, existing crossings would be used to avoid disturbance to large perennial waterbodies, such as rivers.

The construction of drive-through fords and installation of culverts and bridges would require in-stream work that would cause short-term increases in erosion and sedimentation in the waterbody at the construction site, with sedimentation effects extending downstream. Fords would not have long-term effects on water flows or quality, but for culverts and bridges long-term impacts could include reductions in water flows for the duration of time that the culvert or bridge remains installed. Other potential impacts from culverts include channel scouring, changes in channel geometry and gradient, and aggradation or degradation of the stream channel.

Temporary crossing structures (including temporary bridges, temporary culverts, and other methods) would be used with all stream crossings with flow during the construction period (i.e., when the road is used to transport equipment to and from construction sites) to pass flow, reducing potential adverse short-term impacts on water quality. Long-term impacts would be eliminated since the temporary crossing structures would be removed after construction, and the affected areas would be reclaimed.

Culverts would be designed and installed under the guidance of a qualified engineer who would recommend placement locations, culvert sizing, and proper construction methods on a site-specific basis to minimize potential impacts. Construction may occur during periods of low water or normal flow. The use of equipment in streams would be minimized. Culvert slope would not exceed stream gradient. Typically, culverts would be partially buried in the streambed to maintain streambed material in the culvert. Sandbags or other nonerosive material would be placed around the culverts to prevent scour or water flow around the culvert. Adjacent sediment-control structures such as silt fences, check dams, rock armoring, or riprap may be necessary to prevent erosion or sedimentation. Streambanks and approaches may be stabilized with rock or other erosion-control devices.

IPC would conduct construction of culverts under a Construction General Stormwater Permit (1200-C) in Oregon. Construction of culverts would be conducted under a Construction General Permit required for stormwater management operations in Idaho. These permits require development of BMPs to protect streams from stormwater runoff. BMPs would also be employed to minimize sedimentation to waterbodies from construction activities.

All streambed disturbances would be completed under the terms of a USACE CWA Section 404 permit, which governs activities within any waters of the US. In Idaho and Oregon, additional requirements would be met for the permitting of cut or fill in wetlands and waters (Oregon) and for the permitting of stream-channel alteration activities in streambeds (Idaho). In-stream work would also be conducted during Oregon Department of Fish and Wildlife-designated in-stream work windows, which vary based on fish species present within or supported by each waterbody.

Potential impacts on surface water from stream crossings during project operations include erosion of streambanks and sedimentation of road runoff from stormwater. Culverts may be blocked by debris in streams and cause water to back up and flood areas. Use of roads during maintenance activities may promote erosion.

Roads and Project Facilities Disturbance

The construction of new roads and improvement of existing roads for construction and operations access to the transmission line and other facilities would result in stream crossings and vegetation removal as discussed above and increased erosion and sedimentation as discussed for soils in Section 3.2.1 (Earth Resources) of this Draft EIS. Disturbances to the drainage patterns, both short-term and long-term would be restored during recontouring activities to the extent practicable.

303(d) Listed Waterbodies

The construction of access roads and stream crossings could result in localized effects on TMDL and 303(d) listed sediment-impaired streams from soil disturbance during construction. The Proposed Action proposes 29 stream crossings on sediment-impaired and temperature-listed streams, with 23 of the 29 being in the Middle Snake – Succor Subbasin on Owyhee County, Idaho (Appendix B.2, Table B.2-1 [crossings in parenthesis]). Soil disturbances can increase soil erosion (or water runoff in areas with compacted soils) and result in an increase in suspended sediments in adjacent waterbodies (Naiman and Bilby 1998). These impacts would be greatest where roads cross waterbodies because of the direct disturbances to banks and riparian vegetation. About 90 acres of ground disturbance are proposed within 500 feet of 303(d) listed streams (Appendix B.2, Table B.2-2). Implementation of design features for soils, such as recontouring and decompaction (as described in Section 3.2.1), would avoid migration of construction-related sediment into adjacent waterbodies.

Crossings of temperature-listed streams at points that do not currently contain forested vegetation (which serves as summer stream shade) would not have a measurable impact on average stream temperatures. However, tree removal would be necessary in forested riparian areas to provide clearance for energized lines or for access roads, and this could contribute to local increases in stream temperatures if substantial amounts of vegetation are cleared, reducing shaded stream cover. Loss of riparian vegetation could also reduce contributions of large woody debris and terrestrial organic input; and increase bank instability and erosion potential. Approximately two acres of forested riparian vegetation adjacent to temperature-listed streams would be disturbed by the Proposed Action. Additional erosion- and sediment-control measures to minimize impacts on surface water would be contained in the SWPPP and would apply to construction near TMDL and 303(d) listed streams.

Impacts resulting from the spanning of waterbodies by the transmission line would primarily result from right-of-way vegetative clearing and maintenance of tree heights. Spanning of waterbodies by the transmission line would result in only minor changes in stream temperatures, sedimentation, or water quality.

Groundwater

Approximately 62 acres of disturbance may occur in Groundwater Drinking Water Source Areas (Table 3-26). IPC would comply with applicable regulations for managing surface disturbances and land uses and materials in Groundwater Drinking Water Source Areas.

Project construction has the potential to cause adverse impacts on groundwater wells in areas of shallow bedrock as a result of blasting. Uncased groundwater wells would be the most vulnerable to disturbance from blasting. Many groundwater wells in southern Idaho are constructed as “open holes” meaning they are not cased along their entire interval. If nearby blasting causes the dislodging of a rock from the boring sidewall, the rock could fall down the well and trap the submersible pump. This circumstance could result in damage to the well. The effects of well damage could be loss of a potable water supply or loss of irrigation water flow to farmland. Design features would include payment for damages or provision of an alternative water source if a well is damaged by blasting.

Project construction also has the potential to adversely impact groundwater quality in shallow groundwater areas. Where shallow groundwater exists, excavations for transmission line structures may contact shallow groundwater. Typically, contact with construction equipment would not impact groundwater quality except to increase turbidity temporarily in a limited area. This is because the foundation depths for over 70 percent of the project’s support structures (towers, H-frames, and monopole tangent and dead-end structures) would be 15 feet or less. Heavy dead-end, H-frame structures, if used, would require the deepest (40-foot) foundations, and would have a greater likelihood of contacting shallow groundwater. With the exception of 24 acres in Baker County and 14 acres in Malheur County, depths to groundwater throughout the analysis area exceed 40 feet. As a result, other than isolated, site-specific impacts if deep foundations are required, it is unlikely that the Proposed Action or the alternatives would affect groundwater regionally. The Proposed Action and alternatives could temporarily affect groundwater quality in drinking water wells to a limited extent from excess sediment influx into groundwater wells located near project excavations.

A third type of potential impact on groundwater resources are construction dewatering. If dewatering of excavations is employed, it could result in a localized, temporary drawdown of groundwater levels, temporarily reducing the yield of nearby shallow groundwater wells. Water supply wells are typically deeper than the proposed maximum excavation depth of 40 feet, so a temporary construction dewatering limited to that depth is not likely to affect water yield. Adverse effects, if they did occur, would be compensated as provided in the approved mitigation measures.

During operations, insulating mineral oil is used in some electrical equipment at substations, such as transformers, and some reactors and circuit breakers. Oil-filled equipment would be placed within containment structures to prevent equipment oil from percolating into the ground or entering surface waterbodies in the event of a rupture or leak. The containment structures take many forms, depending on site requirements, environmental conditions, and regulatory restrictions. Containment structures include pits with oil-impervious layers, on- or off-site storage tanks, or oil-water separators.

Construction Water Requirements

Much of the water used during construction would be used for dust control on service or access roads. Water would also be required to mix Portland cement concrete for the foundations to support transmission towers, substations and communication stations. As described in the Revised Plan of Development (IPC 2011a), IPC would procure water from municipal or commercial sources, or under a temporary water use agreement with landowners holding existing water rights. No new water rights would be required.

The transmission line construction is estimated to require approximately 6,000 gallons of water per day for dust control and approximately 1,500 to 2,000 gallons per day for tower foundations (Table 3-27 and Table 3-28), equivalent to about two or three large water truckloads per day. A typical construction water truck holds approximately 4,000 to 5,000 gallons. Construction of the nine communication stations is estimated to require approximately 3,200 gallons (Table 3-29). The water use estimates presented are preliminary. The actual water requirements will be defined during final engineering design and will depend on a number of factors including weather, soil type, length of construction, and construction sequencing.

Table 3-27. Estimated Construction Water Requirements for Dust Control for Transmission Lines and Communication Stations by County

Route Name	County	Miles	Estimated Construction Duration	Total Dust Control Water Requirement (gallons)	Average Daily Water Use (gallons per day)
Proposed Action	Morrow (Oregon)	46.7	243	1,267,625	6,000
Proposed Action	Umatilla (Oregon)	49.4	257	1,340,914	6,000
Proposed Action	Union (Oregon)	39.9	207	1,058,148	6,000
Proposed Action	Baker (Oregon)	69.4	361	1,970,405	6,000
Proposed Action	Malheur (Oregon)	71.8	373	2,038,546	6,000
Proposed Action	Owyhee (Idaho)	23.9	124	678,569	6,000
Proposed 138/69-kV Rebuild	Baker (Oregon)	5.4	54	147,420	3,000
Total Proposed Action Miles		306.5	—	—	—

Table 3-28. Estimated Construction Water Requirements for Tower Construction by County

Route Name	County	Miles	Water for Concrete Per Structure (gallons)	Number of Structures	Total Concrete Water Requirement (gallons)	Average Daily Water Use (gallons per day)
Proposed Action	Morrow (Oregon)	46.7	2,219	221	490,482	2,020
Proposed Action	Umatilla(Oregon)	49.4	1,847	204	376,712	1,466
Proposed Action	Union(Oregon)	39.9	1,732	180	311,736	1,502
Proposed Action	Baker(Oregon)	69.4	1,798	294	528,488	1,464
Proposed Action	Malheur(Oregon)	71.8	1,684	317	533,820	1,430
Proposed Action	Owyhee (Idaho)	23.9	1,749	108	188,852	1,520
Proposed 138/69-kV Rebuild	Baker(Oregon)	5.4	368	72	26,505	491
Total Proposed Action Miles		306.5	—	—	—	—

Table 3-29. Estimated Construction Water Requirements for Communication-Station Construction by County

County	Number of Communication Stations	Construction Duration (days)	Water for Concrete (gallons/ foundation)	Number of Concrete-Pad Foundations	Total Concrete Water Requirement (gallons)	Average Daily Water Use (gallons/day)
Morrow (Oregon)	1	1	357	1	357	357
Umatilla (Oregon)	1	1	357	1	357	357
Union (Oregon)	2	2	357	2	714	357
Baker (Oregon)	2	2	357	2	714	357
Malheur (Oregon)	3	3	357	3	1,071	357
Owyhee (Idaho)	0	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
				Project Total	2,856	—

Table Note: See Table 3-27 for water requirements for dust-control for communication stations.

The total anticipated consumption of water for construction of the proposed B2H Project is approximately 10.5 million gallons, or approximately 34 acre-feet of water over the approximately 2-year construction period.

Floodplains and Flood Hazards

For the Proposed Action, approximately 690 acres of potential construction disturbance would occur in areas of moderate to high flood hazard as shown in Table 3-26. Encroachment of a B2H Project structure into a flood path could result in flooding of or erosion damage to the encroaching structure, diversion of flows and increased flood risk for adjacent property, or increased erosion on adjacent property.

Wetlands

Impacts are analyzed here based on the data reviewed and preliminary design, not on field verification or delineation, and do not include the avoidance and minimization of impacts that would occur as part of the final design of the B2H Project.

Construction would result in short-term and long-term impacts to wetlands. The acres of short-term disturbance during construction are based on the preliminary B2H Project design (Table 3-30). Short-term impacts are those wetlands that would be restored and return to full function following construction. The restoration of these wetlands and their return to full function depends on the type of vegetation. These are considered short-term impacts because wetland function would decrease on a short-term basis, but wetland function would be restored.

Table 3-30. Acres of Short-Term Impacts on Wetlands during Construction

Route Name	County	Land Ownership	Emergent Wetlands	Scrub-Shrub Wetlands	Forested Wetlands
Proposed Action	Morrow	Private	0.37	0	0
Proposed Action	Umatilla	Private	0.53	0.02	0
Proposed Action	Union	Private	0.16	0.09	0
Proposed Action	Baker	BLM	0.30	0.01	0
Proposed Action	Baker	Private	0.86	0.17	0.06
Proposed Action	Baker	State	0	0	0
Proposed Action	Malheur	BLM	0.30	0.47	0
Proposed Action	Malheur	Bureau of Reclamation	0.58	0	0
Proposed Action	Malheur	Private	0.84	0.80	0
Proposed 138/69-kV Rebuild	Baker	BLM	0	0.19	0
Proposed 138/69-kV Rebuild	Baker	Private	0	0.71	0.70
Total Proposed Action Acres			3.95	2.47	0.76

Table Source: Oregon Wetlands Cover (ORBIC and TWC 2009).

The short-term impacts would be primarily caused by the removal of vegetation and soil disturbance but would not result in a loss of wetland acreage. The effects of short-term impacts caused by clearing may persist beyond the construction phase, and therefore be long-term but not permanent. Vegetation recovery in wetlands would vary depending on the type of vegetation removed. Emergent wetlands would recover the most quickly and could become revegetated within 1 or 2 years of impact. Scrub-shrub wetlands may take up to 10 years to recover. Forested-wetland vegetation recovery could take decades and is dependent on several factors, such as the tree species impacted, seral stage of the impacted forest, hydrologic regime, and elevation.

The direct effect of removing vegetation and disturbing the soil could alter various functions provided by wetlands, resulting in a variety of indirect and secondary effects, such as the provision of wildlife habitat and the ability to trap sediment and nutrients. Soil disturbances and the removal of vegetation within a wetland could temporarily alter the area's ability to moderate flood flow, control sediments, or facilitate surface-water flow. The removal of vegetation could locally increase water and soil temperatures and alter the vegetative composition in these areas.

Increased soil disturbances can lead to invasions by exotic plant species, which can alter the composition and function of wetlands. Any blasting that may occur within or adjacent to a wetland could fracture the bedrock and alter the hydrology of a perched water table, thereby leading to drier conditions and impairing revegetation efforts. The withdrawal of water for use during construction may have short-term effects on wetlands adjacent to streams by reducing the water input that they would receive. Failure to restore disturbed areas to pre-construction conditions (contours, hydrology, segregation, and the restoration of topsoil) could impede the re-establishment of wetland and riparian vegetation. Vegetation in scrub-shrub and emergent wetlands is low growing and does not interfere with transmission lines; therefore, these wetland types would not be impacted by maintenance during the operations phase.

The construction of the B2H Project could result in wetland fill for the duration of the B2H Project or longer, due to the footprints of operational facilities and roads. These impacts would be long-term and would be included in the Section 404 Permit for the B2H Project. An additional long-term wetland is the conversion of forested wetland classes. This would occur during the maintenance of tree heights below the transmission line resulting in a type conversion from forested areas to shrub areas. These actions could result in impacts to 2.9 acres of forested wetlands which is approximately 2.4 percent of the forested wetlands in the analysis area. The final B2H Project design would avoid these areas to the extent practical; however, the preliminary design considered within this analysis does contain some areas where wetlands are directly impacted by permanent roads, towers, and facilities. For the Proposed Action, 5.31 acres of long-term disturbance during operations are anticipated based on the preliminary project design (see Table 3-32). Additional impacts may result from soil compaction, the alteration of surface or subsurface water movement in wetlands, or from blasting effects on springs and seeps.

DESIGN FEATURES

SURFACE WATER

Road construction requiring stream-crossings would occur primarily during the drier seasons to minimize sediment runoff to streams. Erosion, sedimentation, and stream stability would be controlled during construction in and around surface water by the SWPPP and ESCP as well as through the revegetation efforts that are described in the Reclamation, Revegetation, and Weed Management Plan all of which would be finalized and adopted as conditions of approval of the right-of-way grant and special-use authorization.

On all federally managed lands, IPC would consult with the managing agency regarding relevant standards and guidelines pertaining to road-crossing methods at waterbodies. Consultation would include site assessment, design, installation, operation, and maintenance. The performance of low-water stream crossings would be monitored for the life of the access road and would be maintained or repaired as necessary to protect water quality. To reduce the potential for impacts to stream water temperature and sedimentation, thinning or removal of vegetation within or adjacent to waterbodies would be delineated or modified to protect, maintain, or restore riparian and aquatic resource quality and function. Buffers of stream vegetation would be provided in accordance with either default buffer requirements established by jurisdictional fisheries agencies or buffers determined through site-specific analysis. During reclamation, temporarily disturbed lands within the right-of-way would be recontoured, emphasizing the restoration of existing drainage pattern. Hydroseeding, hydromulching, and tackifiers may be used to stabilize disturbed areas. Appropriate interim erosion and sediment control measures would be used if seeding cannot immediately take place.

Measures for permanent erosion and sediment control would be installed along the transmission line within the right-of-way, at substations, and at related facilities in accordance with the SWPPP and ESCP

A number of project design features are described in Appendix C that would be implemented to protect surface water quality, including the following:

- **SW-1**—A SWPPP and an ESCP would be created and implemented to address construction related ground disturbing activities associated with the B2H Project. The SWPPP and ESCP would specify BMPs that would be implemented in order to minimize sediment and other pollutants from impacting waters of the U.S.
- **SW-2**—A storm water team would be assembled to manage construction storm water issues, conduct the required inspections, provided guidance to construction crews, and maintain and update the SWPPP and ESCP as needed.
- **SW-3**—The SWPPP and ESCP would identify areas with critical erosion conditions that may require special construction activities or additional BMPs to minimize soil erosion and would be modified as necessary to account for changing construction conditions and schedules.
- **SW-4—**Short-term and long-term BMPs would be used to control erosion, sediment and other pollutants associated with construction related activities. BMPs would be installed and maintained until disturbed areas meet final stabilization criteria.
- **SW-5**—Damaged temporary erosion and sediment control structures would be repaired in accordance with the SWPPP and ESCP.
- **SW-6**—Upon completion of construction, permanent erosion and sediment BMPs would be installed in accordance with the SWPPP and ESCP.
- **SW-7**—Apply BMPs from Instruction Memorandum OR-2011-074: Best Management Practices to Reduce Sediment Delivery from BLM Roads in Oregon.

- **SPC-1**—An SPCC Plan would be prepared and implemented as applicable for this project and would detail protective measures to prevent and contain spills and leaks of oil and other petroleum products.
- **SPC-2**—Construction spills would be promptly cleaned up and contaminated materials would be transported to a disposal site that meets local, state, and federal requirements.
- **SPC-3**—Fueling areas within staging area would be contained. If fueling is conducted in other areas along the right-of-way, BMPs would be implemented to prevent spills.
- **SPC-4**—If a spill occurs which is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor would be identified and available to further contain and clean up the spill.
- **SPC-5**—For spills in standing water absorbent materials would be used as appropriate by the contractor to recover and contain released materials on the surface of the water. If the standing water is considered a water of the state, it would be reported immediately to the appropriate agency.
- **SPC-6**—If pre-existing contamination is encountered during operations, work would be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party (if identifiable); and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.
- **SPC-7**—Any oil spill to waters of the state or US are reportable. Oil spill notification is required for spills on land of 25 gallons or greater in Idaho. In Oregon, an oil spill on land of 42 gallons or greater requires notification. Notification is required for hazardous material spills of reportable quantities (quantities are listed in the Code of Federal Regulations).
- **SPC-8**—Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes would be located in upland areas away from streams or wells.
- **SPC-9**—Pumps and temporary fuel tanks for the pumps would be stored in containment.
- **SPC-10**—Hazardous material would not be drained on to the ground or into streams or drainage areas. All Project generated trash would be contained. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.
- **SPC-11**—Refueling and storing potentially hazardous materials would not occur within a 100-foot radius of a water body, and 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. Spill preventive and containment measures or practices would be incorporated as needed.
- **REC-5**—Herbicide use near water bodies would follow label requirements, state and federal laws and BLM and USFS recommendations
- **OM-10**—Woody vegetation management within 100 feet of surface water would be completed by hand crews.

- **OM-12**—During operations, IPC would use existing stream crossings or new, permanent crossings that were approved as part of the B2H Project. IPC would not create additional crossings without prior agency permitting and approval.
- **OM-3**—If existing service-road drainage structures are damaged during construction, operations, or emergency activities, IPC would repair or restore those structures as soon as possible.
- **OM-2**—IPC would maintain cross-road drainage on roads that are the responsibility of IPC to maintain, to minimize channeling. Water bars would be installed at curves, significant grade changes, and as requested by federal or state agencies.

Groundwater

Adverse impacts on groundwater quality would be avoided through the use of spill prevention measures as established in the SPCC Plan. These spill prevention measures would help avoid an accidental chemical spill near an open excavation. Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes would be located in upland areas away from streams or wells. IPC has also proposed to compensate any well owner for damage to the well or provide an acceptable alternative water source.

Floodplains and Flood Hazards

Micrositing during the final design of B2H Project facilities would take flood hazards into account in order to minimize flood damage risk to structures. During operations, right-of-way repairs would include spot repair of sites subject to flooding or scouring to prevent damage to both project structures and nearby property.

Wetlands

When possible, wetlands would be avoided during B2H Project siting because of the additional costs associated with their use compared to upland sites and sites with less vegetation. Impacts to wetlands would be avoided and minimized during the final design by micro-siting or rerouting components outside of wetlands to the extent practical; however, there would be locations where this would not be feasible. The Reclamation Plan for Construction Activities, SWPPP, and SPCC Plan include measures to ensure that disturbed areas are re-vegetated and restored to pre-construction conditions and that toxic substances or increased sedimentation do not impact water bodies and associated wetlands.

Residual Effects

Surface Water

With implementation and maintenance of the SWPPP, ESCP, SPCC and appropriate design features in the analysis area during construction, short-term effects on surface water quality as a result of construction of stream crossings would be moderate in localized areas of surface disturbance, because they would be short-term during the period of construction of each individual stream-crossing structure. Other ground disturbing activities in the vicinity of surface waters would result in low effects to water quality. Thinning or removal of vegetation adjacent to surface water bodies would be managed to adequately protect water quality and minimize water temperature effects. Buffers of riparian vegetation would be provided in accordance with either default buffers established by jurisdictional agencies or buffers determined through site-specific analysis. Long-term effects on water quality and temperature would be low with effective implementation of the SWPPP; ESCP; SPCC Plan; Reclamation, Revegetation, and Weed Management Plan; and Operations, Maintenance, and Emergency Response Plan due to operations activities would result in infrequent periodic increases in sedimentation to nearby surface-water resources. The potential for chemical spills that could affect surface waters during operations is negligible.

The relative risk of pollution between the Proposed Action and the alternatives is proportional to the number of stream crossings. Table B.2-1 in Appendix B.2 shows surface water road crossings by crossing type for the Proposed Action and alternatives. While the qualitative effects of the different types of road crossings on water quality would be the same regardless of the alternative, a larger or smaller number of crossings of intermittent and perennial streams would likely result in higher or lower exposures to the risk of adverse water quality effects on surface waters. Several alternatives suggest marked differences from the Proposed Action based on the number of anticipated stream crossings. Table 3-31 shows the number of stream crossings for each of the alternatives as compared to the section of the Proposed Action.

Table 3-31. Comparison of the Number of Stream Crossings by Alternative

Alternative	Alternative Stream Crossings	Proposed Action Stream Crossings
Longhorn	29	50
Longhorn Variation	25	50
Horn Butte	50	50
Glass Hill	7	8
Timber Canyon	131	58
Flagstaff	27	21
Burnt River Mountain	32	18
Tub Mountain South	75	107
Willow Creek	58	101
Malheur S	102	53
Malheur A	96	53
Double Mountain	21	10

Table 3-31 shows that the Longhorn Alternative and Longhorn Variation would cross approximately half as many streams as the Proposed Action. The Timber Canyon Alternative would cross more than twice as many streams as the Proposed Action. While the short- and long-term effects on surface water quality would be low with effective implementation of the design features, SWPPP, and SPCC Plan, the relative risk of adverse effects would be higher or lower depending on the number of stream crossings.

Table B.2-2 in Appendix B.2 shows the number of acres that would be disturbed by construction that are within 500 feet of intermittent and perennial streams for the Proposed Action and alternatives. Table B.2-3 shows the same information for the operations phase of the B2H Project. The proportionate numbers of acres affected by construction and operations of the alternatives is the same as the relative numbers of stream crossings. That is, the Longhorn Alternative would affect approximately half as many acres of land within 500 feet of intermittent and perennial streams as the Proposed Action. Likewise, the Timber Canyon Alternative would affect approximately twice as many acres of land within 500 feet of intermittent and perennial streams as would the Proposed Action.

<u>Section 303(d) Listed Streams</u>

Vegetation removal associated with crossings in forested settings is expected to be minimal and localized and is not expected to produce an overall increase in stream water temperatures. Because less than 1 acre of forested riparian vegetation adjacent to a Section 303 (d) temperature-listed stream would be disturbed by construction of the proposed B2H Project, construction effects on temperature limited streams are expected to be low. Operation effects are anticipated to be negligible.

With effective implementation and maintenance of design features and the measures contained in the SWPPP and ESCP, proposed B2H Project construction and operation effects on Section 303(d) sediment–impaired streams are expected to be low and short-term.

GROUNDWATER

Effective implementation of the SPCC Plan and spill prevention measures would reduce the potential for chemical spills that may affect groundwater during construction to a low probability. Operational activities would occur above ground and would not directly affect groundwater resources.

The construction and operations effects of most of the alternatives on groundwater generally would be the same as for the Proposed Action, with minor quantitative variations based on the relative lengths of the alternatives as compared to the Proposed Action. The Longhorn and Timber Canyon Alternatives, however, would have a noticeably higher potential effect on groundwater drinking water sources than the Proposed Action. Construction of the Timber Canyon Alternative would disturb approximately 190 acres of land that is within a groundwater drinking water source area, whereas the Proposed Action would disturb approximately 55 acres. Construction of the Longhorn Alternative would disturb approximately 117 acres of groundwater drinking water source areas, while the Proposed Action would not create a disturbance. However, with effective implementation of mitigation measures, the construction effects on groundwater for any of the alternatives would be low. Overall, with effective implementation of design features incorporated as conditions of the right-of-way grant, adverse effects on groundwater are anticipated to be negligible.

Construction Water Requirements

While the locations and rates of water diversion for construction water may temporarily affect the individual water sources that would be used, the B2H Project construction effects on water supply in the analysis area are expected to be low and short-term. No adverse effects on existing water rights are anticipated.

Floodplains and Flood Hazards

The exposure to areas of medium and high flood risk of the alternatives is comparable to the Proposed Action, except in the Burnt River Mountain and Brogan areas as follows:

- Burnt River Mountain: Proposed—90.2 acres; Alternative—40.6 acres
- Willow Creek: Proposed—44.7 acres; Alternative—130 acres
- Tub Mountain South: Proposed—50.7 acres; Alternative—279.6 acres

With implementation of appropriate design features and BMPs, the risk of flood damage to project infrastructure, and the risk of project-caused fold damage to other properties, would be low for the Proposed Action and all the alternatives.

Wetlands

Construction effects to wetlands would be short-term, limited to the area of construction activity, and would therefore be moderate for the Proposed Action and all alternatives. Operation of the Proposed Action would have a long-term impact to 5.31 acres of wetlands (Table 3-32). Approximately 1.09 acres of the 5.31 acres would be long-term loss of emergent wetlands. This would be approximately 0.1 percent of the emergent wetlands in the analysis area. Approximately 0.97 acres would be long-term loss of scrub-shrub wetlands. This would be approximately 0.5 percent of the scrub-shrub wetlands in the analysis area. Approximately 0.34 acres of the 5.31 acres would be long-term loss of forested wetlands which would be approximately 0.3 percent of the forested wetlands in the analysis area that would be localized to mostly private land in Baker County. Because these effects would be long-term, they would constitute a moderate impact to wetlands in the B2H Project area.

Table 3-32. Acres of Long-Term Impacts on Wetlands during Operations of the Proposed Action

Route Name	County	Land Ownership	Emergent Wetlands	Scrub-Shrub Wetlands	Forested Wetlands	Forested Right-of-Way Maintenance	Total Operations Impacts
Proposed Action	Morrow (Oregon)	Private	0.05	0	0	0	0.05
Proposed Action	Umatilla (Oregon)	Private	0.25	0.01	0	0.16	0.41
Proposed Action	Union (Oregon)	Private	0.02	0.04	0	0	0.07
Proposed Action	Baker (Oregon)	BLM	0.06	0	0	0.12	0.18
Proposed Action	Baker (Oregon)	Private	0.26	0.05	0.03	1.80	2.15

Route Name	County	Land Ownership	Emergent Wetlands	Scrub-Shrub Wetlands	Forested Wetlands	Forested Right-of-Way Maintenance	Total Operations Impacts
Proposed Action	Baker (Oregon)	State	0	0	0	0.15	0.15
Proposed Action	Malheur (Oregon)	BLM	0.07	0.17	0	0	0.24
Proposed Action	Malheur (Oregon)	Bureau of Reclamation	0.07	0	0	0	0.07
Proposed Action	Malheur (Oregon)	Private	0.31	0.36	0	0	0.67
Proposed 138/69-kV Rebuild	Baker (Oregon)	BLM	0	0.08	0	0	0.08
Proposed 138/69-kV Rebuild	Baker (Oregon)	Private	0	0.26	0.31	0.67	1.24
Total Proposed Action Acres			1.09	0.97	0.34	2.90	5.31

Table Source: Oregon Wetlands Cover (ORBIC and TWC 2009).

The Timber Canyon, Flagstaff, and Burnt River Mountain Alternatives would have more short-term effects to wetlands, and the Timber Canyon Alternative would have more long-term impacts to wetlands than the Proposed Action. Table 3-33 compares the acres of short-term and long-term impacts to wetlands by segment. With micro-siting at final design and implementation of protective measures and design features, short-term effects to wetlands would be low and long-term effects of the Proposed Action and alternatives to wetlands would be moderate.

Table 3-33. Comparison of Acres of Short-Term and Long-Term Impacts on Wetlands

Alternative	Proposed Action		Alternative	
	Short Term	Long Term	Short Term	Long Term
Longhorn	0.37	0.05	0.77	0.13
Longhorn Variation	0.37	0.05	0.0	0.0
Horn Butte	0.37	0.05	0.37	0.05
Glass Hill	0.01	0.01	0.0	0.0
Timber Canyon	0.7	0.27	8.81	2.89
Flagstaff	0.3	0.01	7.35	0.78
Burnt River Mountain	0.58	0.47	4.53	0.83
Tub Mountain South	0.52	0.5	1.48	1.0
Willow Creek	0.52	0.5	0.61	0.22
Malheur S	0.99	0.15	0.2	0.04
Malheur A	0.99	0.15	0.07	0.03
Double Mountain	0.15	0.07	0.0	0.0

3.2.2.7 Mitigation Planning

Water Resources and Floodplains

With effective implementation of design features, the potential for adverse long-term effects to water resources and floodplains would be low. Therefore, no mitigation planning have identified for water resources and floodplains.

Wetlands

As part of the Section 404 permitting process, the USACE, the DSL, and IDWR evaluate whether wetlands have been avoided to the extent practical and whether the effects have been adequately mitigated. The permitting process also identifies additional requirements, as necessary, to comply with USACE and DSL regulations. These requirements include completing compensatory mitigation consistent with the 2008 final rule (USACE 2008:19673) for any permanent loss of wetland area or wetland function. Compensatory mitigation could include the creation, enhancement, or restoration of wetlands to replace the lost wetland function/acreage. Other potential options include purchasing credits from a mitigation bank or in-lieu-fee programs. The type of compensatory mitigation required would be determined by the agencies as part of the Section 404 and DSL removal-fill permitting processes.

Compensatory mitigation involves actions taken to offset unavoidable adverse impacts to wetlands, streams, and other aquatic resources regulated by the CWA Section 404 permitting process and other USACE permits. Compensatory mitigation is a critical tool in helping the federal government meet the longstanding national goal of ‘‘no net loss’’ of wetland acreage and function. There are three mechanisms for providing compensatory mitigation: permittee-responsible compensatory mitigation, mitigation banks, and in-lieu-fee mitigation.

Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided annually. As its name implies, the permittee retains responsibility for ensuring required compensation activities are successfully completed. Permittee-responsible mitigation can be located at or adjacent to the impact site (i.e., on-site compensatory mitigation) or at another location generally within the same watershed as the impact site (i.e., off-site compensatory mitigation). Mitigation banks and in lieu-fee mitigation involves off-site compensation activities generally conducted by a third party—a mitigation-bank sponsor or an in-lieu-fee program sponsor. When a permittee’s compensatory mitigation requirements are satisfied by a mitigation bank or in-lieu-fee program, the responsibility for ensuring required compensation is successfully completed shifts from the permittee to the bank or in-lieu-fee sponsor. Mitigation banks and in-lieu-fee programs conduct consolidated aquatic resource restoration, enhancement, establishment, and preservation projects.

According to the 2008 final rule on compensatory mitigation for losses of aquatic resources (USACE 2008:19673), “compensatory mitigation should be located within the same watershed as the impact site, and should be located where it is most likely to successfully replace lost functions and services, taking into account such watershed-scale features as aquatic habitat diversity, habitat connectivity, relationships to hydrologic sources (including the availability of water rights), trends in land use, ecological benefits, and compatibility with adjacent land uses." The final rule also prioritizes the sequencing of compensatory mitigation from highest priority (most favorable) to lowest priority (least favorable) as follows:

- Mitigation bank credits
- In-lieu-fee program credits
- Permittee-responsible mitigation under a watershed approach
- Permittee-responsible mitigation through on-site and in-kind mitigation
- Permittee-responsible mitigation though off-site and out-of-kind mitigation

The B2H Project does not meet the criteria for a nationwide permit and thus an individual permit and associated mitigation are required. The USACE has indicated that the B2H Project does not fall within any service area of approved and operational mitigation banks or in lieu-fee programs in Oregon or Idaho (Ellis 2011; Warner-Dickason 2011). IPC is currently consulting with the USACE regarding the appropriate type and ratio to use for compensatory mitigation. If mitigation bank or in-lieu-fee programs are unavailable for the B2H Project, IPC would be responsible for the development and implementation of any necessary mitigation.

The extent of compensatory wetland mitigation (CWM) is determined through an evaluation of wetland class, acreage, and the functions and values provided by impacted wetlands. The degree to which wetlands provide functions would be evaluated using the Oregon Wetland Rapid Assessment Protocol (ORWAP) required by the DSL. This assessment method would be used for long-term wetland impacts greater than 0.2 acre; for wetland impacts less than this threshold, best professional judgment may be used for assessing wetland functional values. ORWAP will also be used to characterize the theoretical CWM site by predicting site characteristics to obtain expected functional values. The functional values of the impacted site would be compared to those of the CWM site to determine if adequate compensation is proposed.

In addition to meeting functional-value requirements, the DSL requires the following mitigation ratios be adhered to:

- 1 acre of restored wetland for 1 acre of impact (1:1)
- 1.5 acres of created wetland for 1 acre of impact (1.5:1)
- 3 acres of enhanced wetland for 1 acre of impact (3:1)
- 2 acres of enhanced cropped wetland for 1 acre of impact (2:1)

CWM would likely occur in the form of permittee-responsible mitigation. Wetland mitigation requirements for greater than 0.2 acre of wetland impact require the following principal objectives be met:

- The replacement of wetland functions and values will be demonstrated using the ORWAP to assess the impact and mitigation sites.
- Locally important wetland functions will be replaced on or near-site where appropriate. The linear nature of this Project may necessitate multiple mitigation sites.
- CWM will be implemented in a manner that creates an eventually self-sustaining system.
- The CWM site will be in a logical biological setting chosen by considering a variety of aspects, such as its connectivity to protected habitats, the quality of adjacent upland buffers, long-term maintenance needs, the site's ability to mitigate for impact-site functions, and its compatibility with adjacent land uses.
- The temporal loss of wetlands will be considered and minimized when planning the timing of the wetland impact and mitigation timeframe. This issue is especially relevant for forested wetland mitigation due to the time required to develop a forested vegetation class.

CWM will typically occur through in-kind mitigation by replacing the impacted wetland with the same type of wetland, although allowances may be made for logical mitigation sites that address the needs of the watershed in which the impact is located. The DSL also requires that CWM be created during the same construction season as the wetlands that are impacted. A phased approach may be used for the B2H Project impacts that may occur over more than 1 year, and an increase in mitigation ratios may also be used to compensate for a delay in CWM. Existing wetland sites proposed for CWM must be significantly degraded, including sites that have had significant hydrological alterations, such as diking, ditching, drain tiling, or through fill. Wetland sites that do not qualify include those that have been altered solely through reversible activities, such as invasive cover, grazing, and logging.

The DSL provides additional guidelines for linear projects such as transmission lines. Since these projects often result in small amounts of wetland impact over large areas, individual mitigation sites are often unfeasible. CWM may be combined, resulting in mitigation of the predominant wetland type combining all impacts occurring at the fourth-field hydrologic unit.

Permittee-responsible mitigation requires the preparation of a mitigation plan. The primary sections of a mitigation plan required by the DSL and USACE include goals, objectives, existing site conditions, functional-value assessment, construction maps and drawings, performance standards, a monitoring plan, and long-term protection. The mitigation plan will describe the goals of the project, an overview of the project, and information regarding the property involved in the mitigation project. The objectives of the plan describe how the proposed CWM will replace functional values; how the B2H Project will minimize temporal losses; be self-sustaining and meet local watershed needs; and how the B2H Project will justify out-of-kind mitigation if needed.

The existing site conditions will provide a detailed description of the results of the mitigation site wetland delineation, physical wetland characteristics, and how the site will generally be restored. The functional value assessment provides an explanation for the assessment method used for the project and details how changes in functional value will be replaced by the CWM. The construction drawings and maps include grading plans, plant-species lists and quantities, and construction scheduling. The monitoring plan includes the performance standards by which the CWM will be evaluated, the technical methods to be used to monitor the site throughout the monitoring period, the schedule for monitoring, and an explanation of where and why monitoring locations will be placed. Finally, the plan includes provisions for ensuring the long-term protection of the site. CWM sites on private land will have provisions in place, such as a deed restriction or conservation easement, that protects the land in perpetuity. This final section of the monitoring plan provides the details for the long-term stewardship of the CWM to provide for long-term maintenance issues, such as trash removal and water control structure monitoring.

IPC is developing a Wetland Mitigation Framework Plan, which includes measures to ensure that adequate compensation is provided for wetland impacts.

3.2.3 Vegetation Resources

3.2.3.1 Introduction

Vegetation resources discussed in this section include vegetation communities, special status plant species, and noxious weeds that occur or have the potential to occur within the B2H Project area. This section describes the existing conditions and trends of the vegetation communities and special status plant species within the Project area and the potential effects of siting, construction, and operation of the Proposed Action and alternatives on these resources. In addition, this section also discusses the presence of noxious weeds in the analysis area and the potential for their spread due to B2H Project activities. Species that warrant increased management attention that will be discussed in detail below include USFWS candidate, proposed, threatened and endangered plant species, BLM and USFS special status plant species, state of Oregon endangered, threatened, critical, and vulnerable species and noxious weed species.

3.2.3.2 Regulatory Framework

Implementation of the Proposed Action and alternatives would need to be consistent with statutes, regulations, plans, programs, and policies of federal agencies, state and local governments, and affiliated tribes.

Federal

Endangered Species Act

The federal ESA was enacted in 1973. This law established a regulatory system to protect species that are at risk of extinction. Plant species listed under the ESA are protected from any acts prohibited under Section 9(a)(2), which include import and export, removal and possession from and malicious damage to areas under Federal jurisdiction, transport or carry by any means in the course of a commercial activity, and sale or offer for sale in interstate or foreign commerce (ESA, as amended, section 9(a)(2) 50 CFR 17.61 and 50 CFR 17.71).

Bureau of Land Management 6840 Manual and Policy

The BLM's objective where sensitive species are concerned is to provide protections consistent with the ESA to conserve or recover listed species and their associated ecosystems such that long-term recovery and delisting are achieved. The authority for this policy is provided to the BLM by a number of regulations including the ESA, Sikes Act, Federal Land Policy and Management Act, and departmental manuals. It is BLM's policy that "actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species." and "Bureau listed species shall be managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the ESA" (BLM 2008).

U.S. Forest Service Manual 2672: Planning for Management and Recovery

The USFS manual directs the management of sensitive species on USFS lands through a series of policies to ensure USFS actions do not affect listed species. Pursuant to this goal USFS Manual 2672 chapter 2672.41 directs biological evaluations with the objective of ensuring "that the Forest service actions do not contribute to loss of viability of threatened, endangered, proposed, or sensitive plant and animal species, or contribute to a trend towards Federal listing under the Endangered Species Act of any species." Additionally, the USFS is to incorporate in its biological evaluations "concerns for sensitive species throughout the planning process, identifying opportunities for enhancement and reducing any potentially negative impacts" (USFS 2006).

Federal Invasive/Noxious Species Laws and Regulations

The Federal Noxious Weed Act of 1974, as amended in 1990 (7 U.S.C. 2814), requires federal land-management agencies to develop a management program for the control of plants classified under federal or state law as undesirable, noxious, or harmful and to cooperate with state governments in the control of undesirable plants on federal lands. The Carlson-Foley Act of 1968 (Public Law 90-583, 43 U.S.C. 1241) also provides for the control of noxious plants on federal lands by permitting the appropriate state agency to enter such lands to destroy noxious plants. The U.S.Department of Agriculture Noxious Plant List, the BLM National List of Noxious weed Species of Concern, and individual BLM RMPs and USFS land and resource management plans (LRMPs) provide additional direction for the designation and management of invasive and noxious weed species on lands they manage.

In 2009 the Department of the Interior amended the BLM's Land Use Plans (LUPs) in 11 contiguous western states to designate energy transport corridors (West-Wide Energy corridors), consistent with the requirements of Section 368 of the Energy Policy Act of 2005 (USFS 2009). This decision also adopted a series of Interagency Operating Procedures (IOPs), which include management practices and specific requirements related to invasive plant species in order to approve right-of-way grants within the designated corridors.

State

State Threatened and Endangered Species

Oregon passed the Oregon Revised Statute 564.105 with the goal of conservation of threatened or endangered vegetation species through "the use of methods and procedures necessary to bring a species to the point at which [protective] measures are no longer necessary" (Oregon Revised Statutes 496.171[1]). Species on the state list include all native species listed under the federal ESA as of May 15, 1987, as well as any additional native species determined by the appropriate state agency to be in danger of extinction throughout a large portion of its range within Oregon. Jurisdiction and rules for Oregon endangered and threatened species extends to all state lands regardless of ownership. Applicants must be in compliance with these and other state statutes in order to receive a site certificate. In addition, enforcement and management for the state law is limited to state agencies (e.g., the Oregon Department of Agriculture (ODA) for listed plant species).

Noxious Weeds

Oregon

The Oregon State Weed Board, which was established under Oregon Revised Statutes 561.650, provides direction to control noxious weeds at the state level and develops and maintains the State Noxious Weed List. The State Weed Board and the ODA classify noxious weeds in Oregon in accordance with the ODA Noxious Weed Classification System. There are 3 designations under the State's system:

- Class "A" State Noxious Weed: A weed of known economic importance that is not known to occur in Oregon or occurs in small enough infestations to make eradication/containment possible; however, its presence in neighboring states make future occurrence seem imminent.
- Class "B" State Noxious Weed: A weed of economic importance that is regionally abundant but may have limited distribution in some counties.
- Class "T" State Noxious Weeds: A priority noxious weed designated by the State Weed Boards a target on which the ODA would develop and implement a statewide management plan. "T"-designated noxious weeds are species selected from either the "A" or "B" list.

In addition to the ODA Noxious Weed Classification System used by the State, each county in Oregon uses a separate weed classification system and maintains a separate list of county noxious weeds. These lists also use a 3-point designation classification system; however, the definition of each designation differs slightly from the state classification system. The county classification system is as follows:

- Class "A" County Noxious Weed: A weed of known economic/environmental importance known to occur in the county in very small numbers to make eradication practicable or not known to occur but its status in surrounding counties makes future occurrence seem imminent.
- Class "B" County Noxious Weed: A weed of known economic/environmental importance and of moderate to wide distribution and highly invasive, subject to intensive control or eradication where feasible at the county level.
- Class "C" County Noxious Weeds: A weed of known economic/environmental importance and of general distribution that is subject to control or eradication as local conditions warrant.

Idaho

The Idaho Noxious Weed Law (Idaho Code and Statutes, Title 22, Chapter 24) is the basis for the management and control of noxious weeds by the State of Idaho. The Idaho State Department of Agriculture (ISDA) is responsible for administering the state Noxious Weed Law. Noxious Weeds Rules (Idaho Administrative Procedures Act, 02.06.22) designate weeds as noxious statewide. Idaho's noxious weeds are divided into three categories defined as follows (ISDA 2012):

- Statewide Early Detection and Rapid Response Noxious-Weed List: If any of these weeds are found in Idaho, they shall be reported to the ISDA within 10 days following positive identification by the University of Idaho or another qualified authority as approved by the ISDA director.

These weeds shall be eradicated during the same growing season as the one in which they are identified.

- Statewide Control Noxious Weed List: These weeds are known to exist in varying populations throughout the state. The concentration of these weeds is at a level where control and/or eradication may be possible. A written plan for weeds on the Statewide Control Noxious Weed List shall be developed by the control authority that specifies active control methods to reduce the known population in no more than 5 years. The plan shall be available to the ISDA upon request.
- Statewide Containment Noxious Weed List: These weeds are known to exist in various populations throughout the state. Weed-control efforts may be directed at reducing or eliminating new or expanding weed populations, while known and established weed populations, as determined by the weed-control authority, may be managed by any approved weed control methodology, as determined by the weed-control authority.

3.2.3.3 Issues Identified for Analysis

The following summarizes vegetation resources-related issues that were raised by the public, American Indian tribes, or federal and state agencies during scoping or are issues that must be considered as stipulated by law or regulation.

- What would be the effects of the B2H Project on plant species federally listed under the ESA, state listed, or listed as a Sensitive Plant Species by the USFS or BLM?
- What effects would the B2H Project have on old-growth forests and riparian areas?
- Will disturbed areas be restored after construction?
- What effects would the B2H Project have on fire regimes in the B2H Project area?
- Could the B2H Project result in the introduction or spread of noxious weeds?
- How will vegetation be managed within the transmission line corridor? Will herbicide be the primary mode of vegetation management? What will be the effects?

3.2.3.4 Methodology

Data Sources

Vegetation communities; ESA candidate, proposed, threatened and endangered species; special status plant species; state of Oregon endangered, threatened, critical, and vulnerable species and noxious weed species that may occur in the Project area were identified from Northwest Gap Analysis Project (NWGAP) ecological system and land cover data, USFWS endangered, threatened, proposed and candidate species that occur in Oregon and Idaho; species listed as endangered, threatened, and sensitive in Oregon by ODFW; USFS sensitive species that occur on the Wallowa-Whitman National Forest; and BLM sensitive species that occur in Oregon and Idaho. Statewide lists were refined to include species that have ranges in the vicinity of the Project area.

This initial coarse-filter assessment of vegetation resources was conducted using planning documents, BLM resource management plans (RMPs), USFS LRMPs, Project-specific field studies, existing digital data sources, and previously conducted studies. Specific sources reviewed included:

- NWGAP (Regional Gap Analysis Program)
- Environmental Conservation Online System (USFWS)
- Oregon Wetlands Cover (Institute for Natural Resources and The Wetlands Conservancy)
- NWI Wetlands Mapper (USFWS)
- Oregon's Biodiversity Information Center (ORBIC; Institute for Natural Resources)
- Idaho Fish and Wildlife Information System (IFWIS; IDFG)
- Geographic Biotics Observation System (GeoBOB; BLM)
- Terrestrial Ecological Systems Mapper (NatureServe)
- Weeds Geodatabase (BLM)
- Baker Resource Management Plan (1989)
- Southeastern Oregon Resource Management Plan (2002)
- Owyhee Resource Management Plan (1999)
- Wallowa-Whitman National Forest Land And Resource Management Plan (1990)

A desktop GIS review of NWGAP data was used to identify the majority of vegetation communities that can be classified using relatively coarse resolution (i.e., 30 m) datasets. However, most wetlands and riparian vegetation communities were identified using higher resolution (i.e., 1 – 30 m) data sources when available. The most comprehensive wetlands dataset available in Oregon is the Oregon Wetlands Cover (OWC). The OWC is a compilation of data from numerous sources including the National Wetlands Inventory (NWI), Local Wetlands Inventory (Oregon Department of State Lands), wetlands mapping along state highways (Oregon Department of Transportation), and individual site mapping conducted by a variety of federal, state, academic, and nonprofit sources.

Because this data is limited to Oregon, NWGAP, NatureServe, and NWI data were used to identify wetland and riparian areas in Idaho. Although OWC and NWI have relatively higher resolution than the NWGAP, these data sets still vastly overestimate the acreage of wetlands and surface waters within the analysis areas. Further refinement of the final right-of-way will include microsite changes that will avoid impacts to wetlands and surface waters to the greatest extent possible. Before any right-of-way is granted, detailed ground surveys and wetland delineations will be completed within the B2H Project's site boundary (i.e., 500 feet on either side of the centerline of the selected route) and impacts to wetlands and surface waters are expected to be less than 3 acres overall.

ANALYSIS AREA

In general, the analysis area for vegetation resources was defined as a one mile-wide corridor; 0.5 mile on either side of the Proposed Action and alternatives centerlines. The one mile analysis area was chosen because it is large enough to encapsulate the existing vegetation communities in the vicinity of the project area, as well as the extent of potential direct and indirect impacts on vegetation communities that could occur during construction and operations of the B2H Project. The one mile analysis area was also used for the analysis of first foods because these resources were analyzed within the context of the vegetation communities.

A 10 mile-wide corridor (5 miles on either side of the Proposed Action and alternatives centerlines) was used for identification of special status plant species that could potentially be impacted by the B2H Project. This larger analysis area was chosen to account for the potential uncertainty of the presence (limited survey coverage) and locations (inaccurate or historical mapping techniques) of many special status plant species populations in the vicinity of the project area. Any species with known or suspected occurrences within the 10-mile-wide analysis area were considered to be present within the appropriate vegetation community subtype(s) that could potentially be affected by the Proposed Action and the alternatives.

The analysis area for noxious weeds was defined as the counties within Oregon and Idaho that could potentially be affected by the Proposed Acton and alternatives.

3.2.3.5 Affected Environment

This section describes the existing condition of the vegetation resources that could be affected by implementing the Proposed Action or any of the alternatives.

Affected Environment for All Alternatives

Vegetation Communities

A multitude of vegetation communities ranging from semi-desert grasslands and shrub steppe to montane and subalpine conifer forests occur within the B2H Project Area. These communities are characteristic of and grouped within several major Level III Ecoregions of the Continental United States (U.S. EPA 2013). Four Level III Ecoregions are represented within the various segments of the affected environment of the B2H Project (Figure 3-6; Table 3-34). Ecoregions are distinguished from each other by the patterns and composition of biotic and abiotic characteristics including geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology (Omernik 1987, 1995). The relative importance of each characteristic varies between ecoregions.

The Columbia Plateau ecoregion covers central and southeastern Washington and north-central Oregon and is characterized by broad expanses of semi-arid sagebrush-covered volcanic plains and valleys. This ecoregion is heavily influenced by the presence of the Columbia River, and ecological processes over time have created deep soils that are highly suited for agricultural use. Historically, vegetation in this ecoregions was dominated by grassland and shrub-steppe, but the majority of the area has since been converted to agricultural use and pasturelands. In fact, most of Oregon's grain production occurs in this ecoregion.

The Blue Mountains ecoregion encompasses much of northeastern Oregon and is characterized by steep to rolling mountain habitat; vegetation ranges from shrubland to bluebunch grassland to ponderosa pine woodlands. The area crossed by the B2H Project is a low, open complex of mountains substantially vegetated with coniferous forests. Snow accumulates to depths of 3 to 6 feet in the winter in this area due to its higher elevation.

The Northern Basin and Range ecoregion is located in southeastern Oregon and southwestern Idaho. Sagebrush dominates the landscape in this arid ecoregion, and its topography consists of flat basins, isolated mountain ranges, and basalt cliffs. The primary land use is range and pastureland.

The Snake River Plain ecoregion extends across southern Idaho into eastern Oregon. Sagebrush steppe was historically the dominant vegetation type in this ecoregion; scattered barren lava fields and saltbush (*Atriplex canescens*)-greasewood (*Sarcobatus vermiculatus*) communities are also present. The availability of water for irrigation has resulted in the conversion of a large percentage of the alluvial valleys bordering the Snake River to agricultural use, while most of the surrounding plains and low hills are used for livestock grazing.

For the purposes of this analysis, a variety of ecological systems and vegetation community subtypes that occur within the analysis area have been compiled into seven primary vegetation communities and land cover types (Figure 3-7). The primary vegetation communities and land cover types within the B2H Project area include:

- Grasslands
- Shrublands
- Forest/Woodlands
- Wetlands, Riparian, Surface Water
- Bare Ground, Cliffs, Talus
- Agricultural Lands
- Developed/Disturbed Lands

These broad categories are generally based on the relative abundance of the physiognomy of the major life forms (i.e., grass, forb, shrub, and tree) and degree of anthropogenic modification or disturbance. These primary vegetation communities can be further separated into vegetation community subtypes based on the dominant species and shared biotic and abiotic factors (i.e., soils, precipitation, temperature, elevation, topography) which shape them.

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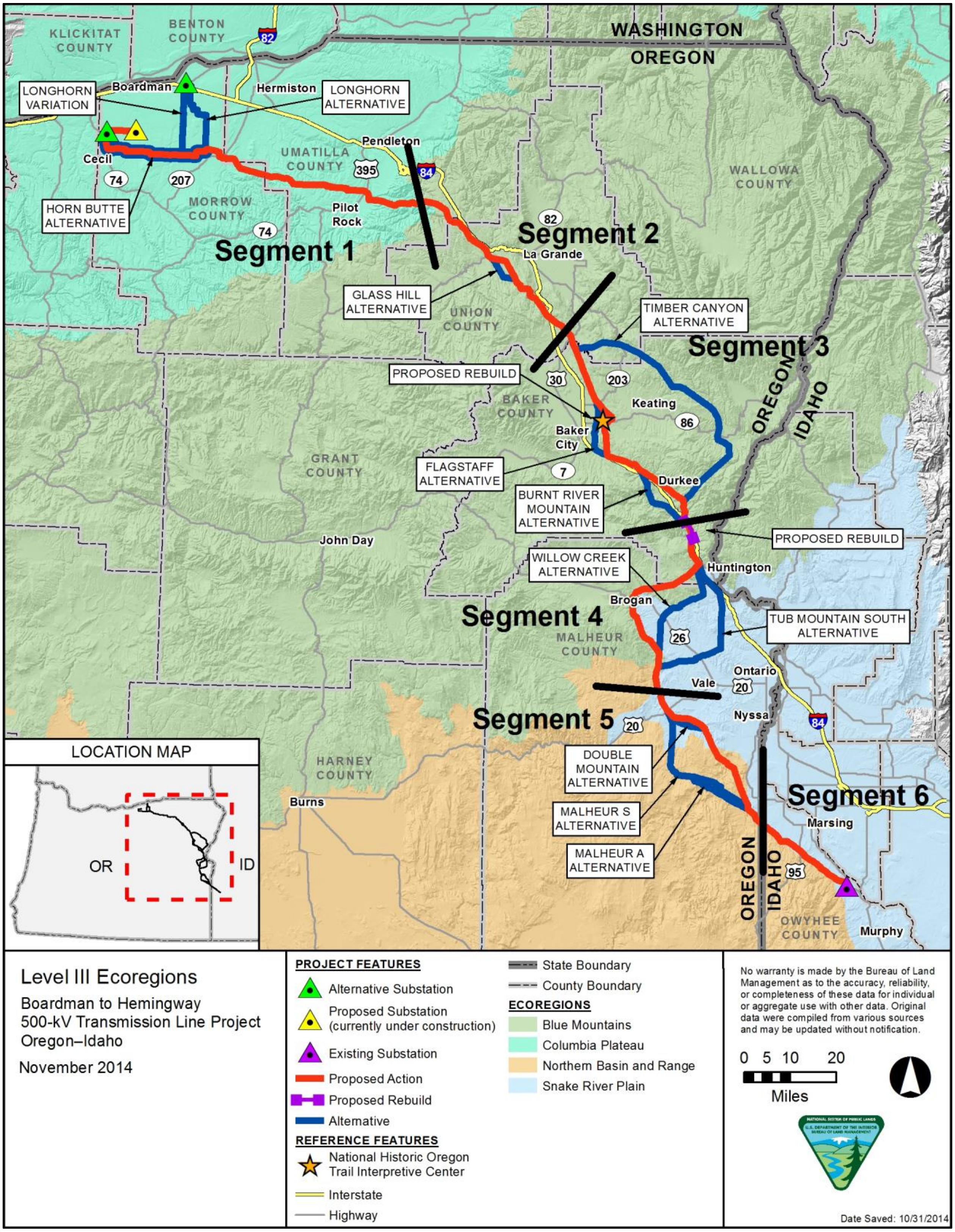


2 **Figure 3-6. Level III Ecoregions**

Table 3-34. Distribution of Ecoregions in the Project Analysis Area

Segment	Ecoregion
1	Columbia Plateau
2	Blue Mountains
3	Blue Mountains
4	Blue Mountains Northern Basin and Range Snake River Plain
5	Northern Basin and Range Snake River Plain
6	Northern Basin and Range Snake River Plain

Vegetation community subtypes comprise various ecological systems described in *Ecological Systems of the Columbia Plateau, Blue Mountains, and Snake River Plain* (NatureServe 2006) that correspond to a number of macrogroups defined in the National Vegetation Classification System (NVCS). Instruction Memorandum 2013-111 *The National Vegetation Classification and Associated Mapping Standards for Bureau of Land Management Planning Documents and Assignment of State-level Vegetation Classification Data Stewards* directs the BLM to use or crosswalk and reference the NVCS for all fine-scale assessments and project-level documents to describe existing vegetation. A crosswalk between the vegetation community subtypes, ecological systems, and NVCS macrogroups is presented in Table B.3-2 in Appendix B.3.

Grasslands

Grasslands may include upland dominated grasslands such as prairie communities, montane grasslands, and wet prairies. Dominant species depend on elevation, soil type, and ecoregion. Periodic fire, soil disturbance by rodent species, and wind all play important roles in maintaining native grasslands (ODFW 2011). Agricultural conversion and non-native species have degraded native grasslands throughout the region. The following grassland community subtypes occur within the B2H Project analysis area:

Native Grasslands

The native grassland subtype is no longer common (except near timberline) in eastern Oregon or southwestern Idaho. Degraded soil conditions and short fire-return intervals may prevent native grasslands from transitioning into a shrub-dominated community although they typically have some shrub component (Franklin and Dyrness 1988). Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*.) naturally dominated this subtype. The classification depends on composition of associated herbaceous species, making this a difficult community to photo interpret, classify, and map.

Non-Native Grasslands

The non-native grassland subtype is dominated by cheatgrass (*Bromus tectorum*), an invasive non-native annual grass, and bulbous bluegrass (*Poa bulbosa*), a perennial non-native invasive grass. Non-native grasslands have extensively replaced native plant communities throughout the region and B2H Project area.

Shrublands

Shrubland communities dominate much of the landscape within the analysis area. These communities differ in structure and species composition depending on the ecoregion, elevation, soil conditions, moisture regimes, and fire history of the area. However, they typically occur on dry flats and plains, rolling hills, saddles, and ridges where precipitation is low. They are dominated by shrub species with components of forbs and grasses. Historically, fire has played an important role in maintaining these communities and served as a cyclical disturbance regime (ODFW 2011). The following shrubland community subtypes occur within the B2H Project analysis area:

Desert Shrub

Desert shrub communities in the B2H Project area are characterized by saline soils that support desert shrubs including shadscale (*Atriplex confertifolia*), greasewood, bud sage (*Picrothamnus desertorum*), winterfat (*Krascheninnikovia lanata*), and hop sage (*Grayia spinosa*), as well as grasses such as inland salt grass (*Distichlis spicata*) and basin wildrye (*Leymus cinereus*) (Franklin and Dyrness 1988). The desert shrub subtype typically occurs at relatively low elevations with limited precipitation.

Dwarf Sagebrush Steppe

Dwarf sagebrush steppe communities occur on a variety of shallow-soil habitats and typically constitute one of the major matrix vegetation community subtypes throughout eastern Oregon and southern Idaho. Dwarf or low sagebrush species including low sagebrush (*Artemisia arbuscula*) and close relatives (*A. rigida* and *A. nova*) typically occur on mountain ridges, flanks and broad terraces. Soils are characteristically very stony and derived from volcanic parent material. The herbaceous component found in this subtype normally includes various species of bunchgrasses and can be dominated by low-statured or mat-forming forbs.

Big Sagebrush Steppe

Big sagebrush steppe communities are widespread and dominant in eastern Oregon and southwestern Idaho, with the dominant shrub species comprised of various subspecies of big sagebrush (*Artemisia tridentata*). This shrubland community subtype is co-dominated by bunchgrasses, such as bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass, as well as other primary shrub species (Franklin and Dyrness 1988). While the commonly occurring Inter-Mountain Basins Semi-Desert Shrub-steppe is also included here (Tetra Tech 2011), Wyoming big sage (*A. tridentata* ssp. *wyomingensis*) is characteristically replaced in this ecological system by Greene’s rabbitbush (*Chrysothamnus greenei*), Douglas rabbitbush (*C. viscidiflorus*), mormon tea (*Ephedra viridis*), rubber rabbitbush (*Ericameria nauseosa*), broom snakeweed (*Gutierrezia sarothrae*), and winterfat.

Mountain Shrub

This shrub community subtype occurs at higher elevations and is similar to the other sagebrush steppe subtypes except it is typically dominated by other shrub species, due primarily to elevation and precipitation, such antelope bitterbrush (*Purshia tridentata*), chokecherry (*Prunus spp.*), snowberry (*Symphoricarpus spp.*), serviceberry *(Amelanchier alnifolia*), and *Ceanothus spp*. Due to the higher moisture availability at sites where these communities occur, the herbaceous understory is typically robust with a variety of bunchgrasses and forbs.

Forests/Woodlands

Forest and woodland communities are found throughout the project area. Forests and woodlands are the most dominant vegetation communities found in the Blue Mountains ecoregion, with Juniper and Mahogany Woodlands occurring primarily in the Northern Basin and Range and the Snake River Plain ecoregions. The following forest and woodland subtypes occur within the B2H Project analysis area:

Mixed Conifer Forest

The mixed conifer forest subtype is very diverse and composed of a variety of forest types that typically include several dominant tree species, but also includes stands dominated by a single species. Communities dominated by several tree species include those composed of mixed Grand fir (*Abies grandis*)/Douglas-fir (*Pseudotsuga menziesii*), mixed tamarack, and subalpine/montane stands. Mixed grand fir/Douglas-fir communities occur in the Blue Mountains and are the most common forest type found within the B2H Project Area. Douglas-fir is typically the most dominant species but begins to decrease in abundance as elevations change, ultimately being replaced by subalpine fir (*Abies lasiocarpa*) at higher elevations and Ponderosa pine (*Pinus ponderosa*) or big sagebrush at lower elevations (Franklin and Dyrness 1988). NatureServe (2013) describes this ecological system as a seral matrix of large patches dominated or co-dominated by one or combinations of the above species.

Grand fir (a fire-sensitive, shade-tolerant species) has increased on many sites once dominated by Douglas-fir and ponderosa pine. These species were formerly maintained in this subtype by low-severity wildfire. The mixed tamarack community is comprised of stands dominated by western larch (*Larix occidentalis*). Very young stands can appear to consist entirely of western larch, especially after fires. However, other tree species are typically found within this subtype, including Douglas-fir, ponderosa pine, Grand fir and lodgepole pine (*Pinus contorta*) (Franklin and Dyrness 1988; USFS 2011b). Dominant species within the subalpine/montane forest in the analysis area include subalpine fir, Engelmann's spruce (*Picea engelmannii*), mountain hemlock (*Tsuga mertensiana*) and lodgepole pine. However, species compositions often vary based on stand age, elevation, and individual site characteristics. Subalpine/montane forest species typically dominate at elevations higher than those found within the B2H Project Area. Additional tree species that may be found in this community include western larch and grand fir.

Communities dominated by a single species include those composed of ponderosa pine and lodgepole pine. Ponderosa pine communities typically occurs as open woodland and contains a variety of common tree species that vary based on elevation and moisture regime. This community is common in much of the Blue Mountains. Ponderosa pine forests are found in the arid transition zone between shrub-steppe and higher elevation forests. In the analysis area, this subtype is typically dominated by ponderosa pine, with mixtures of Douglas-fir, grand fir, lodgepole pine, western larch, western juniper, and quaking aspen (*Populus tremuloides*) (Franklin and Dyrness 1988).

Lodgepole pine communities are an early seral community that occurs on disturbed sites. It only attains structural stability on broad level pumice flats. Lodgepole pine is the dominant tree species in this community and typically occurs in pure or near pure stands regardless of the seral stage. Lodgepole pine is capable of growing throughout a wide range of moisture regimes from the edge of the shrub-steppe zone to seasonally flooded wetlands; thus, understory vegetation varies widely with the corresponding moisture regime (Franklin and Dyrness 1988).

Rocky Mountain Aspen

The Rocky Mountain aspen subtype is found within montane and subalpine zones. This subtype is dominated by aspen and lacks a significant conifer component (CNHP 2005). This subtype is an important wildlife habitat and occurs in portions of the Proposed Action and alternatives in the Blue Mountains region.

Juniper and Mahogany Woodland

The juniper and mahogany woodland subtype includes western juniper and mountain mahogany woodland communities. Western juniper woodlands in the analysis area is composed of widely-spaced western juniper trees, a discontinuous shrub layer, and an herbaceous layer dominated by grasses. These woodlands occur in a very dry zone located between the shrub-steppe and ponderosa pine forests. Western juniper is the dominant tree species and dominant shrubs may include big sagebrush, antelope bitterbrush, rubber rabbitbush and wax currant (*Ribes cereum*). The herbaceous layer is dominated by wheatgrass and Idaho fescue (Franklin and Dyrness 1988). The mountain mahogany community is described by Franklin and Dyrness (1988) as a transition zone between the lower edge of ponderosa pine communities and the upper edge of the sagebrush dominated shrub-steppe communities. This community is dominated by curl-leaf mountain mahogany (*Cercocarpus ledifolius*) with scattered ponderosa pine and western juniper as well. The understory is dominated by big sagebrush and yellow rabbitbush.

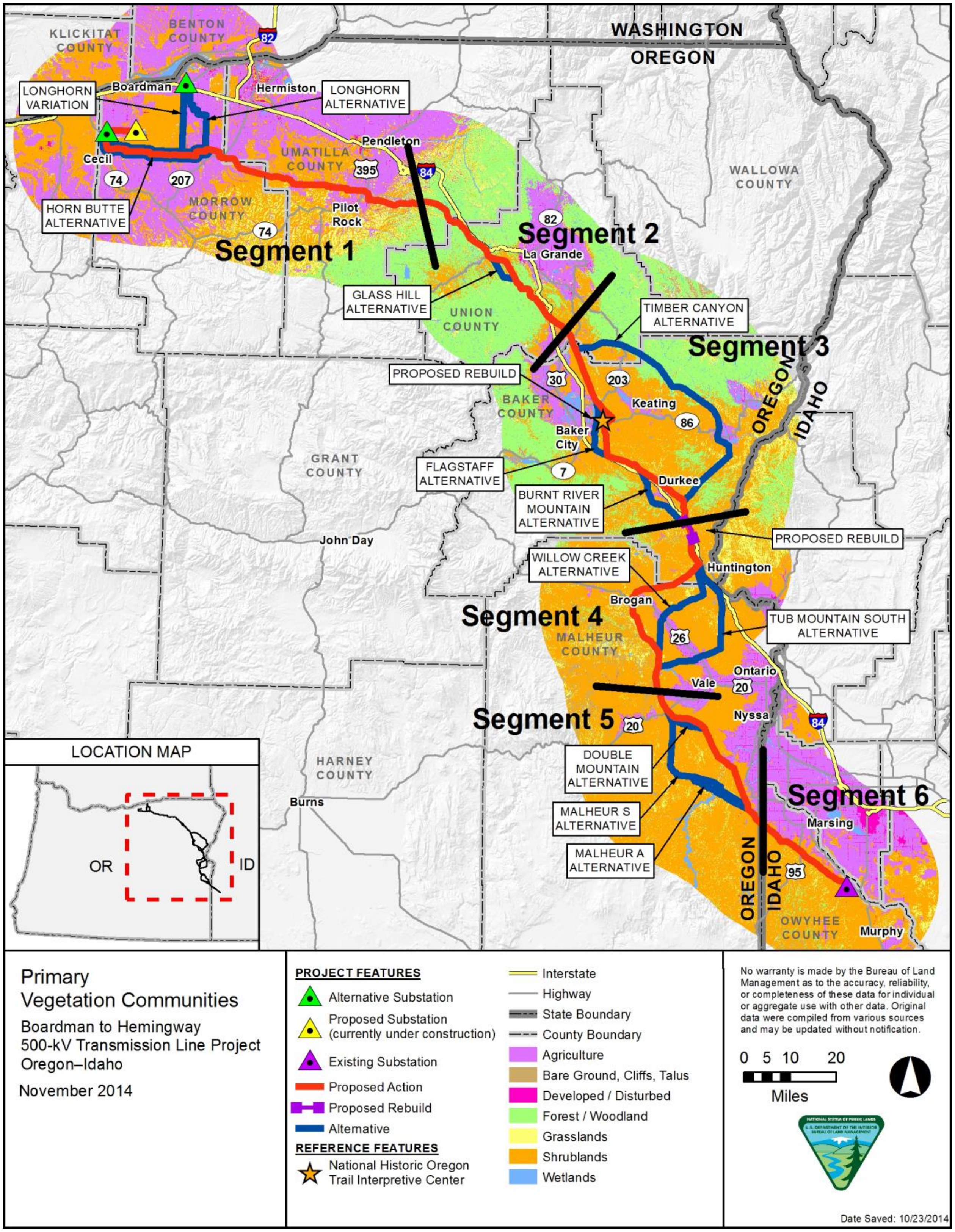


Figure 3-7. Primary Vegetation Communities

Wetlands, Riparian, and Surface Water

Wetlands occur in areas where water saturation is the dominant factor determining the nature of the soil and the plant species present. Wetlands are vital habitats for many wildlife species, especially birds and amphibians, and are also important for the ecosystem services that they provide, such as sediment trapping, flood control, water filtering, erosion control, and nutrient retention. Wetlands are uncommon along most of the Proposed Action and alternatives. Due to the small amount of land occupied by wetlands and their disproportionate importance to wildlife, the federal government has adopted a no net-loss policy in order to preserve this important vegetation community. Therefore, any wetlands disturbed by the B2H Project would be reconstructed, rehabilitated, and/or otherwise recovered.

Components of the Proposed Action and alternatives have been or would be sited away from wetlands to avoid any impacts during construction or operation of the B2H Project. Jurisdictional wetlands are discussed in more detail in Section 3.2.2 (Water Resources). Wetlands that are found in the B2H Project area include emergent wetlands, shrub wetlands, and forested wetlands which may or may occur along the margins of lakes, rivers and streams (i.e., riparian areas). Surface waters in the project area include ponds, lakes, and in some cases, rivers.

Emergent wetlands in the analysis area are defined by the dominance of emergent herbaceous vegetation and less than 30 percent cover of trees and shrubs (Cowardin et al. 1979). They occur over a variety of locations; including arid-climate ephemeral depressions, wet alpine meadows, and bogs. Vegetation is also variable based on the locale but includes species adapted to prolonged inundation or soil saturation. Vegetation found in emergent wetlands may include grasses, sedges, rushes, and other forbs adapted to wet conditions.

Scrub-shrub wetlands in the analysis area are defined by at least 30 percent shrub cover and less than 30 percent tree cover. These areas dominated by woody vegetation less than 20 feet tall, and can include shrubs and saplings (Cowardin et al. 1979). These wetlands occur over a wide range of elevations and are the equivalent of the OWC and NWI Palustrine Scrub-Shrub Wetland. Willows commonly dominate scrub-shrub wetlands in the analysis area.

Forested wetlands are defined by at least 30 percent tree cover and by the dominance of woody vegetation more than 20 feet tall (Cowardin et al. 1979). Common species found in forested wetlands include black cottonwood (*Populus trichocarpa*), quaking aspen, and hawthorn (*Crataegus douglasii*). Forested wetlands are equivalent to the NWI Palustrine Forested Wetland.

Throughout the majority of the project area, many of the wetlands classified as scrub-shrub and forested would be considered riparian areas. Riparian areas are unique vegetation communities that occur adjacent to stream courses, and provide habitat for numerous plant and animal species. They generally occupy transitional areas between aquatic and upland habitats, and may function as protective buffers for aquatic resources. Although riparian habitats are often combined with wetlands (as a result of their intimate relationship to the hydrological regime), riparian areas differ from wetlands in that they are generally linear, more terrestrial (less hydric), and are often dependent on a natural disturbance regime relating to flooding and stream dynamics (Naiman et al. 2005). Common herbaceous riparian species include common reed (*Phragmites australis*), cattail (*Typha sp.*), bulrush

(*Schoenoplectus americanus*), Nebraska sedge (*Carex nebrascensis*) and Arctic rush (*Juncus arcticus*). Common riparian shrubs and trees include coyote willow (*Salix exigua*), Woods rose (*Rosa woodsii*), cottonwood (*Populus sp.*), and red-osier dogwood (*Cornus sericea*).

Surface water, including ponds, lakes, streams, and rivers, is extremely important for wildlife occurring in arid regions. Areas classified as open water include ponds, lakes, streams, and rivers. In addition, this land cover type might include two anthropomorphic wetland types; Introduced Riparian Vegetation and Ruderal Wetland. Most of the open water habitats in the analysis area are in the form of intermittent streams that are fed by stormwater runoff, although perennial watercourses and surface water diversions for agriculture also occur. Ruderal wetlands will be discussed in terms of developed/disturbed land cover types. Watercourses that are crossed by the Proposed Action and alternatives include tributaries to the Umatilla River (Bird Creek and Butter Creek), tributaries to the Snake River (Burnt River, Grande Ronde River, Owyhee River, Powder River, and Succor Creek), and a tributary to the Columbia River (Willow Creek).These areas are discussed in more detail in Section 3.2.2 (Water Resources).

Bare Ground, Cliffs, and Talus

Bare ground, cliffs, and talus land covers are areas with sparsely vegetated plant communities, where the predominant habitat features are more related to geological substrates versus vegetation components. These areas, especially cliffs and talus fields, are essential habitat features for many animal species that use them for nesting substrate or hiding cover. Cliffs provide rock crevices and ledges raised above the ground, away from predators and somewhat protected from the elements. Talus fields extend out from below cliff faces and steep slopes, providing hiding cover and microhabitat conditions. Many special status plant species present in the B2H Project area occur in these sparsely vegetated ecological systems.

Agriculture

Agricultural areas within Oregon and Idaho vary annually in composition. Major crops produced in this area include wheat, barley, alfalfa, hay, potatoes, onions, sugar beets, carrots, and corn. Cultivated croplands and modified grasslands are plowed and harvested seasonally, while pastures are mowed, hayed, or grazed one or more times a year. The agricultural land cover within the B2H Project area includes irrigated agriculture, dry land farming, dairy operations, and grazing pastures on private lands.

Developed/Disturbed

The developed and disturbed land cover typically results from the complete conversion of a site or an area from its natural condition. Developed areas typically contain non-native vegetation in the form of landscaping around buildings and homes, as well as weed lots with invasive plants that have become established in disturbed landscapes. Nevertheless, scattered and isolated blocks of native or non-native vegetation may remain in developed and disturbed areas and wildlife species that are more tolerant of human activity may use these areas (e.g., greenbelts, parks, and backyards).

Federally Listed Species

In response to a request from the BLM, the USFWS provided information on plant species from their Endangered Species Program that may occur in the proposed project location and/or may be affected by the B2H Project (USFWS 2014 a, b). After considering the ranges, distributions and habitats of the species provided by the USFWS, it was determined that one plant species listed as threatened could potentially occur within the analysis area or could potentially be affected by the B2H Project (Table 3-35). A detailed description of this species is included in Appendix B.3.

Table 3-35. Federally Listed Plant Species by Primary Vegetation Community and Segment

Species	Status	Primary Vegetation Community	Occurrence Potential by Segment [2]					
			1	2	3	4	5	6
Howell's spectacular thelypody [1] (*Thelypodium howellii* ssp. *spectabilis*)	USFWS Threatened, OR BLM, OR State Endangered	Grassland	N	K	K	N	N	N

Table Abbreviations: USFWS = U.S. Fish and Wildlife Service; OR = Oregon; BLM = Bureau of Land Management; K = known to occur; N = not known to occur.

Table Notes: [1] Priority species identified by BLM botanist Susan Fritts for detailed analysis. [2] Occurrence potential includes known to occur (K) (i.e., documented within the analysis area) and not known to occur (N).

Special Status Species

Special status species include those listed as sensitive by the BLM and USFS and state endangered or threatened in Oregon. A preliminary list of special status species potentially occurring within the analysis area was developed based on (1) county-level lists (Baker, Malheur, Morrow, Umatilla, and Union Counties) of state endangered and threatened species in Oregon (ODWR 2008); (2) BLM statewide lists of sensitive plant species (Oregon BLM 2011b; Idaho BLM 2010); and (3) USFS Region 6 list of sensitive species (Oregon USFS 2011c).

Some of these species are assigned a status by multiple agencies. In addition to special status species, a list of management indicator species was obtained from the Wallowa-Whitman National Forest LRMP, as amended (USFS 1990). Table 3-36 identifies special status species present or potentially present in the analysis area, their listing status, the primary community type(s) in which they are likely to occur and the analysis segment where they are likely to occur. Species accounts, including habitat requirements, known distribution, recent and historical observations, and the likelihood of occurrence in the analysis area, were prepared for special status species and management indicator species and are presented in Appendix B.3. Of these 56 species, 18 were identified by BLM staff as high priority species to be carried forward for detailed analysis (Fritts 2014). These species are indicated in the table below and will be analyzed within their segments of known occurrence.

1 **Table 3-36. Special Status Plant Species by Primary Vegetation Community and Segment**

Species	Status [1]	Primary Vegetation Community	Occurrence Potential by Segment [2]					
			1	2	3	4	5	6
Laurent's milkvetch (*Astragalus collunus* var. *laurentii*)	OR State Threatened	Bare Ground	K	N	N	N	N	N
Mingan moonwort (*Botrychium minganense*)	USFS Threatened	Forest, Shrubland, Bare ground	K	K	K	N	N	N
Salt heliotrope (*Heliotropium curassavicum* var. *obovatum*)	OR BLM, USFS Sensitive	Disturbed	K	N	K	K	K	N
Douglas' clover (*Trifolium douglsii*)	OR BLM, USFS Sensitive	Forest/Woodlands, Shrubland	N	K	N	N	N	N
Many-flowered phlox (*Phlox multiflora*)	OR BLM, USFS Sensitive	Forest/Woodlands, Bare ground, Cliffs, and Talus	N	K	N	N	N	N
Oregon semaphore grass (Pleuropogon oreganus)	OR BLM, USFS Sensitive, OR State Threatened	Grassland, Wetland	N	K	N	N	N	N
Calcareous buckwheat (*Eriogonum ochrocephalum* var. *calcareum*)	ID BLM	Shrubland, Bare ground, Cliffs, and Talus	N	N	K	K	N	N
Crenulate moonwort (*Botrychium crenulatum*)	OR BLM, USFS, OR State Candidate	Bareground, Cliffs, and Talus	N	N	K	N	N	N
Cusick's lupine (*Lupinus lepidus* var. *cusickii*)	OR BLM, OR State Endangered	Bare ground, Cliffs, and Talus; Developed/Disturbed	N	N	K	N	N	N
Malheur prince's plume (*Stanleya confertifolia*)	OR BLM, ID BLM, OR State Candidate	Bareground, Cliffs, and Talus	N	N	K	K	K	K
Moonwort (*Botrychium lunaria*)	OR BLM, USFS	Forest/Woodland	N	N	K	N	N	N
Prairie moonwort (*Botrychium campestre*)	OR BLM, USFS	Grasslands	N	N	K	N	N	N
Slender moonwort (*Botrychium lineare*)	OR BLM, USFS	Developed/Disturbed	N	N	K	N	N	N
Twin-spiked moonwort (*Botrychium paradoxum)*	OR BLM, USFS, OR State Candidate	Unclassified	N	N	K	N	N	N
Upward-lobed moonwort (*Botrychium ascendens)*	OR BLM, USFS, OR State Candidate	Grassland, Wetland, Disturbed	N	N	K	N	N	N
Western moonwort (*Botrychium hesperium*)	OR BLM, USFS	Woodlands/Forest, Wetlands, Disturbed	N	N	K	N	N	N
Cordilleran sedge (*Carex cordillerana*)	OR BLM, USFS	Wetlands	N	N	K	N	N	N

Species	Status [1]	Primary Vegetation Community	Occurrence Potential by Segment [2]					
			1	2	3	4	5	6
Clustered lady's slippers (*Cypripedium fasciculatum*)	OR BLM, USFS, OR State Candidate	Wetlands	N	N	K	N	N	N
Mountain moonwort (*Botrychium montanum*)	OR BLM, USFS	Grasslands	N	N	K	N	N	N
Retrorse sedge (*Carex retrorsa*)	OR BLM, USFS	Woodlands/Forest	N	N	K	N	N	N
Stalked moonwort (Botrychium pedunculosum)	OR BLM, USFS, OR State Candidate	Wetlands	N	N	K	N	N	N
Least phacelia (*Phacelia minutissima*)	OR BLM, ID BLM, USFS, OR State Candidate	Bare ground	N	N	K	N	N	N
Red-fruited lomatium (*Lomatium erythrocarpum*)	OR BLM, USFS, OR State Endangered	Bare ground	N	N	K	N	N	N
Cronquists stickseed (*Hackelia cronquistii*)	OR BLM, OR State Threatened	Grassland, Shrubland	N	N	N	K	K	N
Snake River goldenweed (*Pyrrocoma radiata* syn. *Haplopappus radiate*)	OR BLM, OR State Endangered	Grassland, Shrubland	N	N	N	K	K	N
Golden buckwheat (*Eriogonum chrysops*)	OR BLM, OR State Threatened	Grassland, Shrubland	N	N	N	N	K	N
Greeley's wavewing (*Cymopterus acaulis* var. *greeleyorum* syn. *Cymopterus glomeratus* var. *greeleyorum*)	OR BLM, ID BLM	Grassland, Shrubland	N	N	N	N	K	K
Janish's penstamon (*Penstemon janishiae*)	ID BLM	Grassland, Shrubland	N	N	N	N	K	K
Malheur cryptantha (*Cryptantha propria*)	ID BLM	Grassland, Shrubland	N	N	N	N	K	K
Malheur valley fiddleneck (*Amsinckia carinata*)	OR BLM, OR State Threatened	Grassland, Shrubland	N	N	N	N	K	N
Malheur yellow phacelia (*Phacelia lutea* var. *calva*)	ID BLM	Grassland, Shrubland	N	N	N	N	K	N
Mulford's milk-vetch (*Astragalus mulfordiae*)	OR BLM, ID BLM, OR State Endangered	Grassland, Shrubland	N	N	N	N	K	N
Owyhee clover (*Trifolium owyheense*)	OR BLM, USFS, OR State Endangered	Grassland, Shrubland	N	N	N	N	K	N

Species	Status [1]	Primary Vegetation Community	Occurrence Potential by Segment [2]					
			1	2	3	4	5	6
Saltwort buckwheat (*Eriogonum salicornioides*)	OR BLM	Grassland, Shrubland	N	N	N	N	K	N
Sterile milk-vetch (*Astragalus cusickii* var. *sterilis*)	OR BLM, ID BLM, OR State Threatened	Grassland	N	N	N	N	K	N
Stiff milk-vetch (*Astragalus conjunctus* var. *conjunctus*)	ID BLM	Grassland, Shrubland	N	N	N	N	K	N
Basin goldenrod (*Solidago spectabilis*)	ID BLM	Wetland	N	N	N	N	K	N
Bigelow's four-o'clock (*Mirabilis laevis* var. *retorsa*)	ID BLM	Bare ground	N	N	N	N	K	N
Grimy ivesia (*Ivesia rhypara* var. *rhypara*)	OR BLM, OR State Endangered	Bare ground	N	N	N	N	K	N
Packard's wormwood (*Lomatium packardiae*)	Endemic	Bare ground	N	N	N	N	K	N
Packard's blazingstar (*Mentzelia packardiae*)	OR BLM, OR State Threatened	Bare ground, cliffs, and talus	N	N	N	K	N	N
Smooth mentzelia (*Mentzelia mollis*)	OR BLM, ID BLM, OR State Endangered	Bare ground	N	N	N	N	K	K
Slickspot peppergrass (*Lepidium papilliferum)*	ID BLM	Shrubland	N	N	N	N	N	N
Carveseed (*Glyptopleura marginata)*	ID BLM	Grassland, Shrubland	N	N	N	N	N	K
Cushion cactus (*Escobaria vivipara* var. *vivipara* syn. *Coryphantha vivipara)*	ID BLM	Shrubland	N	N	N	N	N	K
Cusick's pincushion (*Chaenactis cusickii)*	ID BLM	Shrubland	N	N	N	N	K	K
Desert pincushion (*Chaenactis stevioides)*	ID BLM	Shrubland	N	N	N	N	K	K
Dimeresia (*Dimeresia howellii)*	ID BLM	Grassland, Shrubland	N	N	N	N	N	K
Earth lichen (*Catapyrenium congestum* syn. *Heteroplacidium congestum)*	ID BLM	Unclassified	N	N	N	N	N	K
Rigid threadbush (*Nemacladus rigidus*)	ID BLM	Shrubland	N	N	N	N	N	K
Simpson's hedgehog cactus (*Pediocactus simpsonii*)	ID BLM	Shrubland	N	N	N	N	N	K
Snake river milkvetch (*Astragalus purshii* var. *ophiogenes*)	ID BLM	Shrubland	N	N	N	N	N	K

Species	Status [1]	Primary Vegetation Community	Occurrence Potential by Segment [2]					
			1	2	3	4	5	6
White eatonella (*Eatonella nivea*)	ID BLM	Shrubland	N	N	N	N	N	K
Winged-seed evening primrose (*Camissonia pterosperma* syn. *Chylismiella pterosperma*)	ID BLM	Shrubland	N	N	N	N	N	K
Rafinesque's pondweed (*Potamogeton diversifolius*)	USFS	Ponds, Lakes, Rivers	N	N	N	N	N	K
Least snapdragon (*Sairocarpus kingii* syn. *Antirrhinum kingie*)	ID BLM	Unclassified	N	N	N	N	N	K

Table Notes: [1] Status designations include Oregon BLM Sensitive (OR BLM), Idaho BLM Sensitive (ID BLM), USFS Sensitive (USFS). [2] Occurrence potential includes known to occur (K) (i.e., documented within the analysis area) and not known to occur (N).

Noxious Weeds

Noxious weeds include all species listed on federal, state and county noxious weed lists. Table B.3-1 in Appendix B.3 includes the noxious weeds occurring within the counties that would be crossed by the Proposed Action and the alternatives.

Some noxious weed species have significant factors which impact their spread and control throughout the B2H Project area. Factors that affect the ability of some noxious weed species to spread or be controlled within the B2H Project area include particularly dense abundance in one or more counties, compounds poisonous to livestock, detrimental effects to the biodiversity of natural communities, production of fuel loads for wildfires, and statutes dictating mandatory controls or limits on methods of control (especially herbicides). Management techniques for noxious weeds are described in the Environmental Protection Measures and Framework Reclamation Plan (Appendix E and Appendix G of the Revised POD).

First Foods/Ethnobotanical Resources

Ethnobotanical resources include plants important to tribal groups for subsistence, economic, medical and ceremonial purposes. Ethno-habitats are microhabitats defined by tribal members as having particular importance. A sample of plant species that may have cultural value to tribes and their associated primary vegetation habitats and sites in which they commonly occur is presented in Table 3-37.

Table 3-37. Potential Ethnobotanical Resources

Primary Vegetation Community	Specific Habitat/Feature	Associated Plants of Cultural Value
Shrublands	Lithic soils	Sagebrush; roots, including biscuit root, bitterroot, yampa
Wetlands, Riparian, and Surface Water	Wet/moist meadow	Camas; bistort; sedge; tobacco root; cow parsnip
Wetlands, Riparian, and Surface Water	Riparian areas	Chokecherry; currant; serviceberry; willow; red osier dogwood; elderberry; hawthorn; rose; Indian hemp
Wetlands, Riparian, and Surface Water	Wet woodland	Western spring beauty; yellow bell
Grasslands (Native)	Dry slope and grassland	Wild onion; sego or mariposa lily; balsamroot; hyacinth
Forests/Woodlands	Forest	Huckleberry; black tree lichen; mushroom varieties; pine species

Table Source: Baker RMP (BLM 1989).

BLM has commissioned ethnographic studies among the Shoshone Paiute Tribes of the Duck Valley Indian Reservation and Confederated Tribes of the Umatilla Indian Reservation to identify botanical resources that may possess important spiritual, cultural and/or economic values.

The analysis areas of the Proposed Action and alternatives within all the segments provide habitat for vegetation that is considered culturally significant to tribes. Ethnographic studies may reveal more precise information on location, distribution, and condition of plant communities. Exercise of treaty rights could include, but is not limited to, collection of plants for economic, religious, and cultural use. Various historical factors arising from European contact and development within the analysis area have affected the availability of these plants for tribal use. The invasion of noxious weeds, road building, fire, and agricultural developments are among the sources of disruption. The affected environment of first foods and ethnobotanical resources are discussed in the context of their source vegetation communities and will not be discussed specifically in the segment analyses.

AFFECTED ENVIRONMENT BY PROJECT SEGMENT

SEGMENT 1—MORROW-UMATILLA

Vegetation Communities

Segment 1 occurs in the Columbia Plateau ecoregion (Table 3-34; Figure 3-6). Agriculture is the principal land cover within the Segment 1 analysis areas, while shrublands and grasslands are the dominant vegetation community types (Table 3-38; Figure 3-8). The primary vegetation communities within the B2H Project area are discussed in detail below with additional descriptions of community subtypes and ecological systems.

Grasslands

Native and non-native grasslands occur roughly equally within the analysis areas of the Proposed Action and all alternatives in Segment 1 (Table 3-39). Native grasslands on the western portion of the segment are predominantly comprised by the Columbia Basin Foothill and Canyon Dry Grassland, Columbia Plateau Steppe and Grassland, Columbia Basin Palouse Prairie and Intermountain Basins Semi-Desert Grassland ecological systems and are described below. The Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland and Rocky Mountain Subalpine-Montane Mesic Meadow ecological systems occur in the foothills of the Blue Mountains on the eastern portion of Segment 1. These native grasslands are associated with the Blue Mountains and are described in Segment 2 below where they are more dominant and their discussion is more appropriate.

The native grasslands of the Columbia Basin Foothill and Canyon Dry Grassland ecological system are similar floristically to Columbia Basin Palouse Prairie described below but distinguished by landform, soil, and process characteristics. They occur in the canyons and valleys of the Columbia Basin, particularly along the Snake River canyon, the lower foothill slopes of the Blue Mountains, and along the main stem of the Columbia River in eastern Washington. Occurrences are found on steep open slopes, 300-5,000 feet elevation where slope failures are a common process. Annual precipitation is low, ranging from 4-10 inches and fire frequency is presumed to be less than 20 years. The vegetation is dominated by patchy graminoid cover, cacti, and some forbs (NatureServe 2012).

Table 3-38. Acreage of Primary Vegetation Community/Land Cover Types within the Analysis Areas of the Proposed Action and Alternatives

Segment	Proposed Action/ Alternative	Total Analysis Area (acres)	Vegetation Community/Land Cover (total acres and percent within analysis area [2])						
			Grasslands	Shrublands	Forest/ Woodlands	Wetland, Riparian, Open Water	Bare Ground, Cliffs, Talus	Agriculture	Developed/ Disturbed
1—Morrow-Umatilla	Proposed Action	55,386	7,365 (13 %)	15,249 (28%)	783 (1%)	288 (0.5%)	3 (<1%)	31,011 (56%)	552 (1%)
1—Morrow-Umatilla	Horn Butte Alternative	51,297	7,219 (14%)	14,476 (28%)	767 (1%)	224 (0.4%)	3 (<1%)	27,997 (55%)	475 (1%)
1—Morrow-Umatilla	Longhorn Alternative	45,371	7,128 (16%)	11,874 (28%)	767 (2%)	291 (0.6%)	3 (<1%)	24,660 (54%)	543 (1%)
1—Morrow-Umatilla	Longhorn Variation [1]	47,949	6,989 (15%)	14,662 (31%)	767 (2%)	290 (0.6%)	3 (<1%)	24,521 (51%)	590 (1%)
2—Blue Mountains	Proposed Action [1]	29,004	1,164 (4%)	7,280 (25%)	18,146 (63%)	1,409 (4.9%)	156 (1%)	588 (2%)	340 (1%)
2—Blue Mountains	Glass Hill Alternative	28,980	1,193 (4%)	7,827 (27%)	17,547 (61%)	1,411 (4.9%)	191 (1%)	598 (2%)	340 (1%)
3—Baker Valley	Proposed Action	35,818	2,935 (8%)	30,564 (85%)	413 (1%)	344 (1.0%)	502 (1%)	810 (2%)	369 (1%)
3—Baker Valley	Flagstaff Alternative [1]	35,568	2,686 (8%)	28,997 (82%)	455 (1%)	868 (2.4%)	626 (2%)	2,089 (6%)	494 (1%)
3—Baker Valley	Timber Canyon Alternative	45,544	3,605 (8%)	23,325 (51%)	15,443 (34%)	1,439 (3.2%)	201 (<1%)	1,844 (4%)	201 (<1%)
3—Baker Valley	Burnt River Mountain Alternative [1]	35,780	2,810 (8%)	30,240 (85%)	906 (3%)	348 (1.0%)	457 (1%)	743 (2%)	392 (1%)
4—Brogan Area	Proposed Action	31,556	12,774 (40%)	16,226 (51%)	68 (<1%)	314 (1.0%)	1,639 (5%)	338 (1%)	300 (1%)
4—Brogan Area	Willow Creek Alternative	27,952	9,462 (34%)	14,749 (53%)	42 (<1%)	299 (1.1%)	1,615 (6%)	1,526 (6%)	365 (1%)
4—Brogan Area	Tub Mountain South Alternative [1]	31,695	12,776 (40%)	13,665 (43%)	41 (<1%)	397 (1.3%)	1,760 (6%)	2,385 (8%)	804 (3%)

Segment	Proposed Action/ Alternative	Total Analysis Area (acres)	Vegetation Community/Land Cover (total acres and percent within analysis area [2])						
			Grasslands	Shrublands	Forest/ Woodlands	Wetland, Riparian, Open Water	Bare Ground, Cliffs, Talus	Agriculture	Developed/ Disturbed
5—Malheur	Proposed Action [1]	25,602	7,987 (31%)	12,188 (48%)	29 (<1%)	306 (1.2%)	4,626 (18%)	532 (2%)	58 (<1%)
5—Malheur	Double Mountain Alternative	25,592	7,377 (29%)	12,552 (49%)	29 (<1%)	288 (1.1%)	4,929 (19%)	466 (2%)	58 (<1%)
5—Malheur	Malheur A Alternative	27,284	6,903 (25%)	15,029 (55%)	19 (<1%)	315 (1.2%)	4,923 (18%)	132 (1%)	63 (<1%)
5—Malheur	Malheur S Alternative	27,569	7,377 (27%)	14,550 (53%)	18 (<1%)	311 (1.1%)	5,233 (19%)	148 (1%)	47 (<1%)
6—Treasure Valley	Proposed Action [1]	15,441	5,854 (38%)	8,421 (55%)	8 (<1%)	71 (0.5%)	497 (3%)	366 (2%)	162 (1%)

Table Notes: [1] Indicates the Environmentally Preferred and Agency Preferred Alternative. [2] Analysis area is defined as a 1-mile corridor; 0.5 mile from either side of the route centerline.

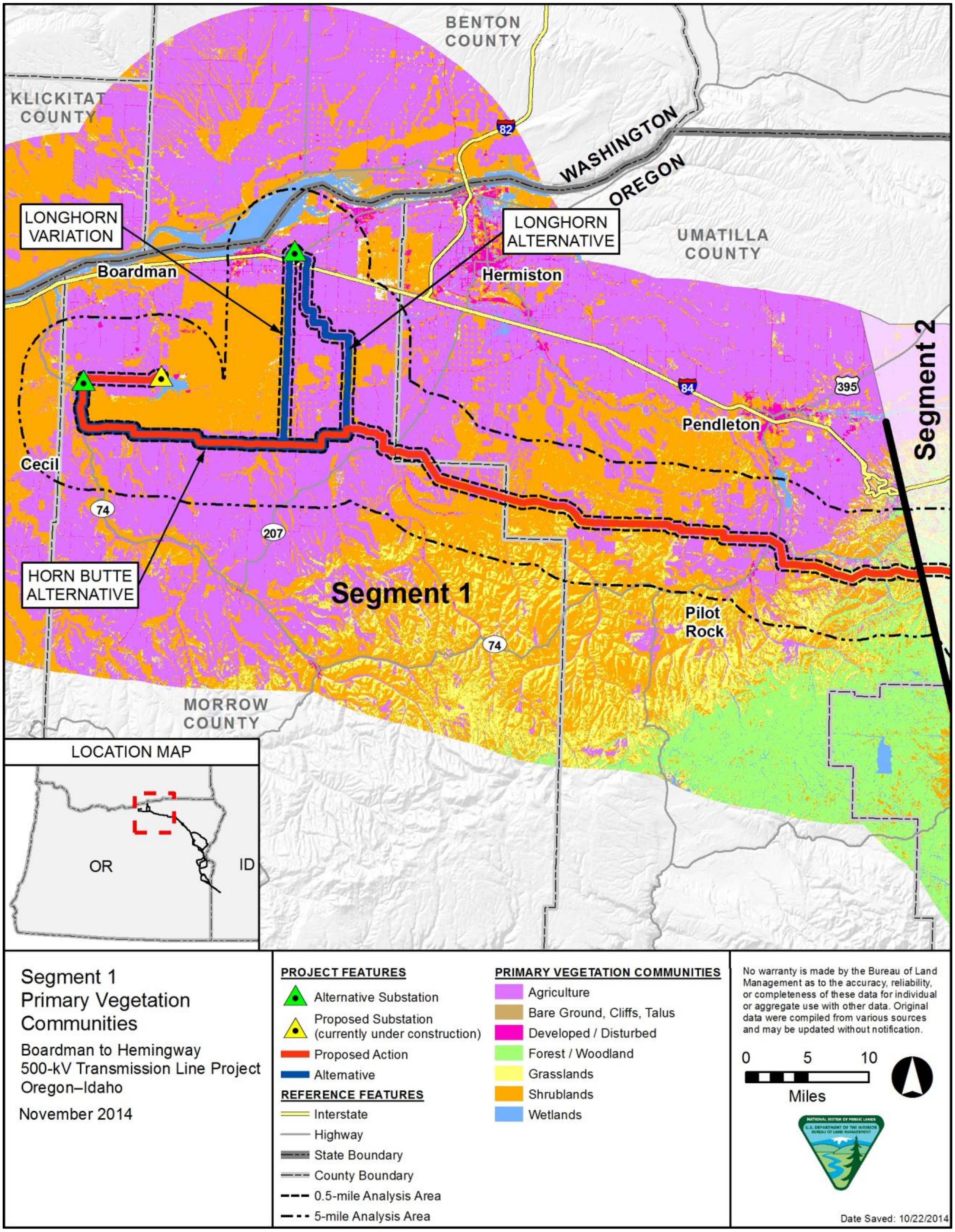


Figure 3-8. Segment 1 Primary Vegetation Communities

Table 3-39. Acreage of Grassland Vegetation Community and Subtypes within the Analysis Areas of the Proposed Action and Alternatives

Segment	Proposed Action/Alternative	Total Grassland Acres within Analysis Area [2]	Total Grassland Subtype Acres within Analysis Area [2]	
			Native Grasslands	Non-Native Grasslands
1—Morrow-Umatilla	Proposed Action	7,365	4,033	3,332
1—Morrow-Umatilla	Horn Butte Alternative	7,219	4,004	3,215
1—Morrow-Umatilla	Longhorn Alternative	7,128	3,919	3,209
1—Morrow-Umatilla	Longhorn Variation [1]	6,989	3,972	3,017
2—Blue Mountains	Proposed Action [1]	1,164	1,094	70
2—Blue Mountains	Glass Hill Alternative	1,193	1,126	67
3—Baker Valley	Proposed Action	2,935	1,598	1,336
3—Baker Valley	Flagstaff Alternative [1]	2,686	1,411	1,275
3—Baker Valley	Timber Canyon Alternative	3,605	1,835	1,770
3—Baker Valley	Burnt River Mountain Alternative [1]	2,810	1,558	1,252
4—Brogan Area	Proposed Action	12,774	5,273	7,501
4—Brogan Area	Willow Creek Alternative	9,462	1,223	8,239
4—Brogan Area	Tub Mountain South [1]	12,776	1,100	11,677
5—Malheur	Proposed Action [1]	7,987	462	7,525
5—Malheur	Double Mountain Alternative	7,377	467	6,911
5—Malheur	Malheur A Alternative	6,903	1,347	5,556
5—Malheur	Malheur S Alternative	7,377	1,330	6,047
6—Treasure Valley	Proposed Action [1]	5,854	218	5,636

Table Notes: [1] Indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Analysis area is defined as a 1-mile corridor; 0.5 mile from either side of the route centerline.

The native grasslands of the Columbia Plateau Steppe and Grassland are similar floristically to Inter-Mountain Basins Big Sagebrush Steppe (described below in Shrublands), but are defined by a more frequent fire regime and the absence or low cover of shrubs over large areas, occasionally entire landforms. These are extensive native grasslands, not grass-dominated patches within the sagebrush shrub-steppe ecological system. These native grasslands occur throughout much of the Columbia Plateau. Soils are variable, ranging from relatively deep, fine-textured often with coarse fragments, and non-saline often with a microphytic crust, to stony volcanic-derived clays to alluvial sands. This grassland is dominated by perennial bunch grasses and forbs (>25 percent cover), sometimes with a sparse (<10 percent cover) shrub layer. Areas with deeper soils are rare because of conversion to other land uses. The rapid fire-return regime of this ecological system maintains these grasslands by retarding shrub invasion, and landscape isolation and fragmentation limit seed dispersal of native shrub species. Fire frequency is presumed to be less than 20 years. Through isolation from a seed source, combined with repeated burning, these are "permanently" (more than 50 years) converted to grassland (NatureServe 2012).

Columbia Basin Palouse Prairie was a once-extensive native grassland system occurring in eastern Washington and Oregon, and west-central Idaho. It is characterized by rolling topography composed of loess hills and plains over basalt plains. The soils are typically deep, well-developed, and old. The cool-season bunch grasses that dominate the vegetation are adapted to winter precipitation. Excessive grazing, past land use and invasion by introduced annual species have resulted in a massive conversion to agriculture or shrub-steppe and annual grasslands dominated by *Artemisia* spp. and cheatgrass or Kentucky bluegrass (*Poa pratensis*). Remnant grasslands are now typically associated with steep and rocky sites or small and isolated sites within an agricultural landscape (NatureServe 2012). This ecological system within the native grassland subtype includes documented occurrences of a needle and thread (*Hesperostipa comata*) – Sandberg bluegrass (*Poa secunda*) herbaceous vegetation association which is considered by NatureServe (2012) as critically imperiled (G1 global status). Agricultural conversion and composition changes following livestock grazing have apparently retrogressed most of the remaining sites to new exotic-dominated community types. Sandy to gravelly soils or certain low fertility soils (old weathered volcanic ash) are associated with this type (NatureServe 2012).

Inter-Mountain Basins Semi-Desert Grassland is a widespread ecological system within the native grassland subtype and includes the driest grasslands throughout the intermountain western U.S. It occurs on xeric sites over an elevation range of approximately 4,750 to 7,600 feet on a variety of landforms, including swales, playas, mesas, alluvial flats, and plains. This system may constitute the matrix over large areas of intermountain basins, and also may occur as large patches in mosaics with shrubland systems. Grasslands in areas of higher precipitation, at higher elevation, typically belong to other systems. Substrates are often well-drained sandy or loam soils derived from sedimentary parent materials but are quite variable and may include fine-textured soils derived from igneous and metamorphic rocks. The dominant perennial bunch grasses and shrubs within this system are all drought-resistant plants (NatureServe 2012).

Non-native grasslands typically are dominated by cheatgrass and occur in areas that have experienced past disturbance. Introduced Upland Vegetation - Annual Grassland is a land cover significantly altered/disturbed by introduced annual grasses. Natural vegetation types are no longer recognizable. Typical graminoid weeds include various bromes (Bromus japonicus, B. rigidus, B. rubens) and Medusahead rye (Taeniatherum caput-medusae); cheatgrass is an especially problematic weedy species which forms persistent, semi-natural plant communities after disturbance of a natural shrub- or grass-dominated community. Cheatgrass typically dominates the community with over 80-90 percent of the total vegetation cover, making it difficult to determine what natural community was formerly present. Non-native grasslands are widespread in Segment 1 and occur in the analysis areas of the Proposed Action and all the alternatives.

Shrublands

Shrubland communities occur within the analysis areas of the Proposed Action and all alternatives in Segment 1 (Table 3-38; Figure 3-8). Although all shrubland subtypes are represented in the analysis areas, Big Sagebrush Steppe is the the most extensive (Table 3-40).

Table 3-40. Acreage of Shrubland Vegetation Community and Subtypes within the Analysis Areas of the Proposed Action and Alternatives

Segment	Proposed Action/Alternative	Total Shrubland Acres within Analysis Area [2]	Total Shrubland Subtype Acres within Analysis Area [2]			
			Desert Shrub	Dwarf Sagebrush Steppe	Big Sagebrush Steppe	Mountain Shrub
1—Morrow-Umatilla	Proposed Action	15,249	230	408	14,444	167
1—Morrow-Umatilla	Horn Butte Alternative	14,476	230	408	13,670	167
1—Morrow-Umatilla	Longhorn Alternative	11,874	92	410	11,204	167
1—Morrow-Umatilla	Longhorn Variation [1]	14,662	212	408	13,875	167
2—Blue Mountains	Proposed Action [1]	7,280	30	162	4,105	2,984
2—Blue Mountains	Glass Hill Alternative	7,827	21	161	3,645	4,000
3—Baker Valley	Proposed Action	30,564	14	1,069	27,375	2,105
3—Baker Valley	Flagstaff Alternative [1]	28,997	101	760	25,922	2,214
3—Baker Valley	Timber Canyon Alternative	23,325	14	2,471	15,790	5,050
3—Baker Valley	Burnt River Mountain Alternative [1]	30,240	13	1,388	26,085	2,754
4—Brogan Area	Proposed Action	16,226	57	1,530	13,222	1,416
4—Brogan Area	Willow Creek Alternative	14,749	58	757	13,132	802
4—Brogan Area	Tub Mountain South Alternative [1]	13,665	299	756	11,737	873
5—Malheur	Proposed Action [1]	12,188	372	146	11,584	86
5—Malheur	Double Mountain Alternative	12,552	450	146	11,870	86
5—Malheur	Malheur A Alternative	15,029	491	85	14,419	34
5—Malheur	Malheur S Alternative	14,550	466	124	13,929	31
6—Treasure Valley	Proposed Action [1]	8,421	1,844	19	6,554	4

Table Notes: [1] Indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Analysis area is defined as a 1-mile corridor; 0.5 mile from either side of the route centerline.

The Desert Shrub subtype occurs on the western portion of the segment and is predominantly comprised by the Inter-mountain Basins Mixed Salt Desert Scrub ecological system. Although the Inter-Mountain Greasewood Flat occurs in negligible amounts in Segment 1, these desert shrublands are associated with the Northern Basin and Range and are described in Segment 5 below where they are more common and their discussion in more appropriate.

Inter-Mountain Basins Mixed Salt Desert Scrub is an extensive ecological system includes open-canopied shrublands of typically saline basins, alluvial slopes and plains across the Intermountain western U.S. Substrates are often saline and calcareous, medium- to fine-textured, alkaline soils but include some coarser-textured soils. The vegetation is characterized by a typically open to moderately dense shrubland composed of one or more saltbush (*Atriplex*) species. Hop sage tends to occur on coppice dunes that may have a silty component to them. Northern occurrences lack saltbush species and are typically dominated by hop sage, winterfat, and/or big sagebrush. In the Great Basin, greasewood is generally absent but, if present, does not co-dominate. The herbaceous layer varies from sparse to moderately dense and is dominated by perennial graminoids. Various forbs are also present (NatureServe 2012).

The predominant ecological systems within the Big Sagebrush Steppe subtype that are represented in Segment 1 include Inter-Mountain Basins Big Sagebrush Steppe and Inter-Mountain Basins Big Sagebrush Shrubland. Inter-Mountain Basins Montane Sagebrush Steppe and Inter-Mountain Basins Semi-Desert Shrub Steppe big sagebrush shrublands occur in low amounts in Segment 1. These big sagebrush shrublands are associated with higher elevations and the Northern Basin and Range, respectively, and are described below where they are more common and their discussion is more appropriate (Segment 3 and 6, respectively).

Inter-Mountain Basins Big Sagebrush Steppe is a widespread matrix-forming ecological system within the Shrub-steppe with Big Sagebrush subtype and occurs throughout much of the Columbia Plateau and northern Great Basin. Soils are typically deep and non-saline, often with a microphytic crust. This shrubland is dominated by perennial grasses and forbs (>25 percent cover) with Basin big sagebrush (*A. tridentata* ssp. *tridentata*), big sagebrush (*A. tridentata* ssp. *xericensis*), Wyoming big sagebrush (*Artemisia tridentata* ssp. *Wyomingensis*), silver sagebrush (*Artemisia cana* ssp. *Cana*), and/or antelope bitterbrush dominating or co-dominating the open to moderately dense (10-40 percent cover) shrub layer. Cheatgrass is an indicator of disturbance, and is typically not as abundant as in the Intermountain West, possibly due to a colder climate. Idaho fescue is uncommon in this system, although it does occur in areas of higherelevations/precipitation. Areas with deeper soils more commonly support Basin big sagebrush but have largely been converted for other land uses. The natural fire regime of this ecological system likely maintains a patchy distribution of shrubs, so the general aspect of the vegetation is grassland. Shrubs may increase following heavy grazing and/or with fire suppression, particularly in moist portions of the northern Columbia Plateau where it forms a landscape mosaic pattern with shallow-soil scabland shrublands. Where fire frequency has allowed for shifts to a native grassland condition, maintained without significant shrub invasion over a 50- to 70-year interval, the area would likely transition to a Columbia Basin Foothill and Canyon Dry Grassland ecological system within the grassland vegetation community type (NatureServe 2012).

Inter-Mountain Basins Big Sagebrush Shrubland occurs throughout much of the western U.S., typically in broad basins between mountain ranges, plains and foothills between 4,900 and 7,550 feet elevation. Soils are typically deep, well-drained and non-saline. These shrublands are dominated by Basin big sagebrush and/or Wyoming big sagebrush. Scattered juniper (*Juniperus* spp.), greasewood, and saltbush (*Atriplex* spp.) may be present in some stands. Rubber rabbitbrush, Douglas rabbitbrush, antelope bitterbrush, or snowberry may codominate disturbed stands (e.g., in burned stands, these may become more predominant). Perennial herbaceous components typically contribute less than 25 percent vegetative cover. Some semi-natural communities are included that often originate on abandoned agricultural land or on other disturbed sites. In these locations, cheatgrass or other annual bromes and invasive weeds can be abundant. This shrubland system is more restricted in environmental setting than the steppe (NatureServe 2012).

Dwarf Sagebrush Steppe and Mountain Shrub shrublands occur at higher elevations on the eastern portion of Segment 1. These shrublands are associated with the Blue Mountains and Northern Basin and Range and are described below (Segment 3 and 2, respectively) where they are more common and their discussion is more appropriate.

Forest/Woodlands

Forest and woodland vegetation communities are located at higher elevations on the eastern portion of Segment 1. They are equally represented within the analysis areas of the Proposed Action and all alternatives, but are a minor component (Table 3-38; Figure 3-8). All forest and woodland subtypes occur within Segment 1. Ecological systems within the Mixed Conifer Forests subtype include Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest, Northern Rocky Mountain Ponderosa Pine Woodland and Savanna, and Northern Rocky Mountain Western Larch Savanna. Ecological systems within the Rocky Mountain Aspen subtype include Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland, and Rocky Mountain Aspen Forest and Woodland. The Juniper and Mahogany Woodland subtype is comprised of the Columbia Plateau Western Juniper Woodland and Savanna. These forests and woodlands are associated with the Blue Mountains and Northern Basin and Range and are described in Segments 2 and 3 below where their discussion is more appropriate.

Wetlands, Riparian, and Surface Water

Wetlands and riparian area communities and surface water occur within the analysis areas of the Proposed Action and all alternatives in Segment 1 but are relatively limited in size and amount (Table 3-38). Wetlands in this region of Oregon consist primarily of saltbrush and greasewood flats, shallow lakes, marsh habitats, and riparian wetland communities. These wetlands are generally referred to as desert wetlands due to their presence in typically dry landscapes consisting of sagebrush shrublands and grasslands. Wetlands in this region are often ephemeral and appear following the winter snow melt. Riparian areas within Segment 1 predominantly occur in the eastern portion at higher elevations near the Blue Mountains.

Bare Ground, Cliffs, Talus

Representation of bare ground, cliffs, and talus is negligible within Segment 1 (Table 3-38).

Agriculture

Agriculture is the dominant land cover in Segment 1 (Table 3-38; Figure 3-8). Actively farmed agricultural fields comprise land in row crops or close-grown crops and also other cultivated cropland. Land that has been devoted to hay fields or pastureland that is in a rotation with row or close-grown crops is considered cultivated cropland. Irrigated agricultural fields are those that undergo the artificial application of water to the land or soil. It is used to assist in the growing of agricultural crops, maintenance of landscapes, and revegetation of disturbed soils in dry areas and during periods of inadequate rainfall. These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards (NatureServe 2012).

Developed/Disturbed

Developed areas in Segment 1 are primarily composed of rural areas that have been modified at low to medium levels which primarily include areas. These areas are primarily associated with rural residences and agricultural operations and are relatively limited within Segment 1 (Table 3-38).

Federally Listed and Candidate Species

There are no federally listed or candidate plant species in Segment 1.

Special Status Species

Although three special status species are known to occur in Segment 1 (Table 3-36), only one species, Laurent’s milk-vetch, has been identified by the BLM as a high priority species for detailed discussion.

Laurent's milk-vetch (State Threatened)

Laurent’s milk-vetch (*Astragalus collinus var. laurentii*), also known as Laurence’s milk-vetch, is an Oregon endemic found in 14 counties in Oregon. It grows on barren grassy hillsides and scablands on basalt tablelands with northwest to south 10-30 or more percent slopes, adjacent to cultivated land and on roadsides; in white-clay loam, silty white-clay, loess deposits and (in disturbed sites) dry cobbly soil, reportedly also on sand dunes; reported from 2000 to 3400 feet elevation; associated with bluebunch wheatgrass- Idaho fescue herbaceous vegetation and bluebunch wheatgrass-Sandberg bluegrass herbaceous vegetation associations, locally tending towards savannas with Rocky Mountain juniper (*Juniperus scopulorum*) (CPNH 2013, NatureServe 2013, OFP 2012, ORNHIC 2010a, TetraTech 2012). Its Global Status is G5T1 (critically imperiled), due to being endemic to Oregon with a relatively narrow range. About 18 occurrences were known in 1983, with plant numbers estimated at 1200 to 1800. Populations are threatened by farming, grazing, and roadside spraying. No sites are considered protected by NatureServe (NatureServe 2013). As this species is dependent on pollinators to produce seed and cannot self-fertilize, it is sensitive to impacts/losses that occur to its pollinators. Furthermore, this species is sensitive to habitat loss and degradation resulting from agricultural development, grazing, road maintenance activities, and invasions by exotic weeds, as well as seed predation by insects (ODA 2011). Laurent’s milk-vetch is presently documented from seven occurrences within the analysis area, near the upper Alkali Canyon watershed of western Umatilla County.

Noxious Weeds

Sixty-one noxious or invasive weeds are documented as occurring within Segment 1. These plants include all those listed on federal, state and county noxious weed lists, although it is not a comprehensive list of every invasive plant species or noxious weed that could potentially occur within Segment 1.

Yellow starthistle is listed by ODA (2012b) as having widespread distribution in Morrow County, Oregon. It inhabits rangeland, pastures, grasslands, roadsides, shrub steppe, and open woodlands, growing wherever cheatgrass grows. It is an aggressive colonizer and spreads at a rate of approximately 6 percent per year. Spread is exclusively by seed, which may lie dormant for as long as 10 years. It causes "chewing disease" and death in horses. This species often creates artificial drought conditions even after average precipitation years, increases erosion from the switch from perennial to annual system, and negatively impacts or eliminates microbiotic crust. It creates a more uniform density in grassland layer and displaces native plants and animals by reducing forage and habitat. It can form impenetrable stands and threatens Pacific Northwest bunchgrasses and rare plants associated with them. Seedlings monopolize soil moisture and are highly competitive for soil nutrients and space. Outside of the Project area it has invaded a desert preserve in Oregon and threatens endangered grassland species (NatureServe 2012, UCNWA 2012).

Segment 2—Blue Mountains

Vegetation Communities

Segment 2 occurs within the Blue Mountains ecoregion (Table 3-34; Figure 3-6). Forests and Woodlands are the principal vegetation communities within the Segment 2 analysis areas, with shrublands also occurring in large amounts (Table 3-38; Figure 3-9). The primary vegetation communities within the B2H Project area are discussed in detail below with additional descriptions of community subtypes and ecological systems.

Grasslands

Grasslands are relatively minor vegetation communities within Segment 2 in the predominantly forested Blue Mountains (Table 3-38; Figure 3-9). Native grasslands contribute the bulk of grassland acreage within the analysis areas of the Proposed Action and alternative, while non-native grasslands are relatively limited (Table 3-39). In addition to the Columbia Basin Foothill and Canyon Dry Grassland, and Columbia Plateau Steppe and Grassland ecological systems described in Segment 1, native grasslands in Segment 2 include the Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland, Rocky Mountain Subalpine-Montane Mesic Meadow and Rocky Mountain Alpine-Montane Wet Meadow. The predominant native grasslands in Segment 2 are adapted to higher elevation and precipitation and are described below.

The native grasslands of the Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland are found at lower montane to foothill elevations. These native grasslands are floristically similar to Inter-Mountain Basins Big Sagebrush Steppe, Columbia Basin Foothill and Canyon Dry Grassland, and Columbia Basin Palouse Prairie, but are defined by shorter summers, colder winters, and young soils derived from recent glacial and alluvial material. They are found at elevations from 1,000 to 5,400 feet, ranging from small meadows to large open parks surrounded by conifers in the lower montane, to extensive foothill and valley grasslands below the lower tree line. Many of these valleys may have been primarily sage-steppe with patches of grassland in the past, but because of land-use history post-settlement (herbicide, grazing, fire suppression, pasturing, etc.), they have been converted to grassland-dominated areas. Soils are relatively deep, fine-textured, often with coarse fragments, and non-saline, often with a microphytic crust. The most important species are cool-season perennial bunch grasses and forbs (>25 percent cover), sometimes with a sparse (<10 percent cover) shrub layer. A soil crust of lichen covers almost all open soil between clumps of grasses. Unvegetated mineral soil is commonly found between clumps of grass and the lichen cover.

The fire regime of this ecological system maintains grassland conditions due to rapid fire return that retards shrub invasion or landscape isolation and fragmentation that limits seed dispersal of native shrub species. Fire frequency is presumed to be less than 20 years. These are extensive grasslands, not grass-dominated patches within the sagebrush shrub steppe ecological system (NatureServe 2012).

The native grasslands of the Rocky Mountain Subalpine-Montane Mesic Meadow ecological system are subalpine-montane herbaceous meadows typically dominated or co-dominated by perennial forbs. This is a small to large patch system that occurs throughout the Rocky Mountains restricted to lower montane to subalpine sites where finely textured soils, snow deposition, or windswept dry conditions limit tree establishment. Sites are gentle to moderate-gradient slopes and relatively moist. Soils are typically seasonally moist to saturated in the spring that will dry out later in the growing season. At montane elevations, soils have an A-horizon over 10 cm (4 in) are usually clays or silt loams, and some occurrences may have inclusions of hydric soils in low, depressional areas. At subalpine elevations, soils are derived of a variety of parent materials, and are usually rocky or gravelly with good aeration and drainage, but with a well-developed organic layer. Many occurrences are small patches found in mosaics with woodlands, dense shrublands, or just below alpine communities. Sites are not as wet as those found in Rocky Mountain Alpine-Montane [Wet Meadow system (NatureServe 2012)].

The Rocky Mountain Alpine-Montane Wet Meadow system includes high-elevation herbaceous communities found throughout the Intermountain region. These communities occur as large meadows in montane or subalpine valleys, as narrow strips bordering ponds, lakes, and streams, and along toe slope seeps. They are typically found on flat areas or gentle slopes, but may also occur on sub-irrigated sites with slopes up to 10 percent. Often alpine dwarf-shrublands, especially those dominated by Salix, are immediately adjacent to the wet meadows. Wet meadows provide important water filtration and wildlife habitat (NatureServe 2012).

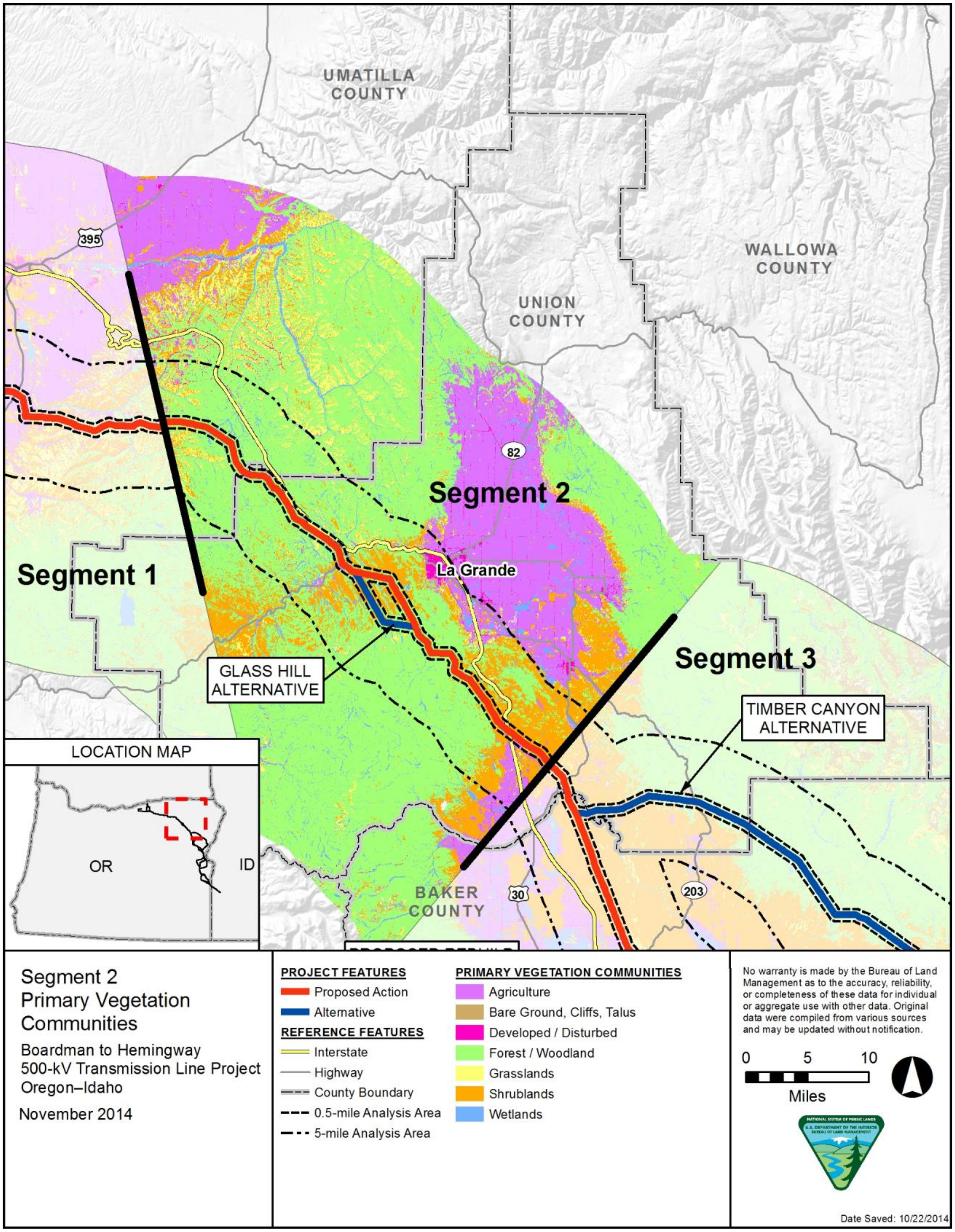


Figure 3-9. Segment 2 Primary Vegetation Communities

Non-native grasslands typically are dominated by cheatgrass (*Bromus tectorum*); however, Medusahead rye (*Taeniatherum caput-medusae*) may become more prevalent at higher elevations where precipitation is greater. Non-native grasslands in Segment 1 occur in areas that have experienced past disturbance and occur in the analysis areas of the Proposed Action and alternative (Table 3-39).

Shrublands

Shrubland communities comprise about a quarter the analysis areas of the Proposed Action and all alternatives in Segment 1 (Table 3-38; Figure 3-9). Although all shrubland subtypes are represented in the analysis areas, Big Sagebrush Steppe and Mountain Shrub subtypes are the most predominant (Table 3-40).

Big Sagebrush Steppe in Segment 2 includes Inter-Mountain Basins Big Sagebrush Steppe and Inter-Mountain Basins Big Sagebrush Shrubland ecological systems similar to Segment 1 described above. Although Great Basin Xeric Mixed Sagebrush Shrubland also occurs in Segment 2, these big sagebrush shrublands will be discussed in Segment 3 where they are more dominant. The mountain big sagebrush community of the Inter-Mountain Basins Montane Sagebrush Steppe ecological system occurs at the higher elevations in Segment 2 and is described below.

Inter-Mountain Basins Montane Sagebrush Steppe is an ecological system which includes sagebrush communities occurring at foothills to montane and subalpine elevations. This system primarily occurs on deep-soiled to stony flats, ridges, nearly flat ridge tops, and mountain slopes. In general, this system shows an affinity for mild topography, fine soils, and some source of subsurface moisture or more mesic sites, zones of higher precipitation and areas of snow accumulation. Across its range of distribution, this is a compositionally diverse system. It is composed primarily of mountain big sagebrush (*Artemisia tridentata* ssp. *Vaseyana*), silver sagebrush (*A. cana* ssp. *Viscidula*), and related taxa such as big sagebrush (*Artemisia tridentata* ssp. *Spiciformis*). Antelope bitterbrush may co-dominate or even dominate some stands. Low sagebrush (*Artemisia arbuscula* ssp. *arbuscula*)-dominated shrublands commonly occur within this system on rocky or windblown sites. Wyoming big sagebrush may be present to codominant if the stand is clearly montane as indicated by montane indicator species such as Idaho fescue, spike fescue (*Leucopoa kingie*), or timber oatgrass (*Danthonia intermedia*). Most stands have an abundant perennial herbaceous layer (over 25 percent cover, in many cases over 50 percent cover), but this system also includes mountain big sagebrush shrublands. In many areas, wildfires can maintain an open herbaceous-rich steppe condition, although at most sites, shrub cover can be unusually high for a steppe system (>40 percent), with the moisture providing equally high grass and forb cover (NatureServe 2012).

Mountain Shrub in Segment 2 includes the Northern Rocky Mountain Montane-Foothill Deciduous Shrubland ecological system. This mountain shrubland is found in the lower montane and foothill regions around the Columbia Basin. These shrublands typically occur below tree line, within the matrix of surrounding low-elevation grasslands and sagebrush shrublands. They also occur in the ponderosa pine and Douglas-fir zones, but rarely up into the subalpine zone (on dry sites). These shrublands are usually found on steep slopes of canyons and in areas with some soil development, either loess deposits or volcanic clays; they occur on all aspects. Fire, flooding and erosion all impact these shrublands, but they typically will persist on sites for long periods. These communities develop near talus slopes as garlands, at the heads of dry drainages, and toe slopes in the moist shrub-steppe and steppe zones (NatureServe 2012).

Desert Shrub occurs on the western portion of the Segment 2 and is a minor component of the vegetation community within the analysis areas (Table 3-40). Similar to Segment 1, the Inter-Mountain Greasewood Flat ecological system occurs in negligible amounts in Segment 2, and is described in Segment 5 below where its discussion in more appropriate. Dwarf Sagebrush Steppe also occurs in Segment 2 (Table 3-40); however, these shrublands are described in Segment 3 where they are more common and their discussion is more appropriate.

Forests/Woodlands

Forests and woodlands of the Blue Mountains are the dominant vegetation community in Segment 2 and occur in the analysis areas of the Proposed Action and alternatives (Table 3-38; Figure 3-9). The Blue Mountains are known for old growth and alpine forest stands. Forest communities are slow to regenerate, requiring decades or longer to restore. In particular, old growth forests in the West are increasingly rare. Restoration of old growth stands requires centuries. The Blue Mountain forest communities provide unique habitat for wildlife species.

Although all forest and woodland subtypes are represented in the analysis areas, the Mixed Conifer Forest is the most predominant (Table 3-41). Rocky Mountain Aspen stands are more abundant and common in Segment 2 and described below. Juniper and Mahogany Woodlands also occur in Segment 2, but will be discussed in Segment 3 where they comprise a major Forest/Woodland subtype and their discussion is more appropriate.

The major Mixed Conifer Forest ecological systems in Segment 2 include Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest, Northern Rocky Mountain Ponderosa Pine Woodland and Savanna, Northern Rocky Mountain Western Larch Savanna, and Northern Rocky Mountain Mesic Montane Mixed Conifer Forest. Mixed Conifer Forest ecological systems in Segment 2 with lesser extents are discussed in less detail and include Rocky Mountain Poor-Site Lodgepole Pine Forest, Rocky Mountain Lodgepole Pine Forest and Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland.

Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest is composed of variable montane coniferous forests. Winter snow packs typically melt off in early spring at lower elevations. Elevations range from 1,500 to 6,300 feet. Most occurrences of this system are dominated by a mix of *Pseudotsuga menziesii* and *Pinus ponderosa.* The nature of this forest system is a matrix of large patches dominated or co-dominated by one or combinations of the above species; *Abies grandis* (a fire-sensitive, shade-tolerant species) has increased on many sites once dominated by *Pseudotsuga menziesii* and *Pinus ponderosa*, which were formerly maintained by low-severity wildfire. Pre-settlement fire regimes may have been characterized by frequent, low-intensity ground fires that maintained relatively open stands of a mix of fire-resistant species. Under present conditions the fire regime is mixed severity and more variable, with stand-replacing fires more common, and the forests are more homogeneous. With vigorous fire suppression, longer fire-return intervals are now the rule, and multi-layered stands of Douglas-fir, ponderosa pine and/or grand fir provide fuel "ladders," making these forests more susceptible to high-intensity, stand-replacing fires. They are very productive forests which have been priorities for timber production. They rarely form either upper or lower timberline forests (NatureServe 2012).

Table 3-41. Acreage of Forest/Woodland Vegetation Community and Subtypes within the Analysis Areas of the Proposed Action and Alternatives

Segment	Proposed Action/Alternative	Total Forest/Woodland Acres within Analysis Area [2]	Total Forest/Woodland Subtype Acres within Analysis Area [2]		
			Mixed Conifer Forests	Rocky Mountain Aspen	Juniper and Mahogany Woodland
1—Morrow-Umatilla	Proposed Action	783	746	6	32
1—Morrow-Umatilla	Horn Butte Alternative	767	746	6	15
1—Morrow-Umatilla	Longhorn Alternative	767	746	6	16
1—Morrow-Umatilla	Longhorn Variation [1]	767	746	6	15
2—Blue Mountains	Proposed Action [1]	18,146	17,242	301	602
2—Blue Mountains	Glass Hill Alternative	17,547	16,482	285	779
3—Baker Valley	Proposed Action	413	28	4	380
3—Baker Valley	Flagstaff Alternative [1]	455	31	11	413
3—Baker Valley	Timber Canyon Alternative	15,443	14,436	480	527
3—Baker Valley	Burnt River Mountain Alternative [1]	906	146	33	727
4—Brogan Area	Proposed Action	68	5	9	54
4—Brogan Area	Willow Creek Alternative	42	<1	9	32
4—Brogan Area	Tub Mountain South Alternative [1]	41	0	9	32
5—Malheur	Proposed Action [1]	29	29	0	<1
5—Malheur	Double Mountain Alternative	29	29	0	<1
5—Malheur	Malheur A Alternative	19	19	0	<1
5—Malheur	Malheur S Alternative	18	18	<1	0
6—Treasure Valley	Proposed Action [1]	8	0	0	8

Table Notes: [1] Indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Analysis area is defined as a 1-mile corridor; 0.5 mile from either side of the route centerline.

Northern Rocky Mountain Ponderosa Pine Woodland and Savanna occur at the lower treeline/ecotone between grasslands or shrublands and more mesic coniferous forests typically in warm, dry, exposed sites. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridgetops are most common. This ecological system generally occurs on glacial till, glacio-fluvial sand and gravel, dune, basaltic rubble, colluvium, to deep loess or volcanic ash-derived soils, with characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acidic pH, an abundance of mineral material, rockiness, and periods of drought during the growing season. In the Oregon "pumice zone" this system occurs as matrix-forming, extensive woodlands on rolling pumice plateaus and other volcanic deposits (NatureServe 2012). Ponderosa pine (primarily var. *ponderosa*) is the predominant conifer; Douglas-fir may be present in the tree canopy but is usually absent. The understory can be shrubby. Understory vegetation in the true savanna occurrences is predominantly fire-resistant grasses and forbs that resprout following surface fires; shrubs, understory trees and downed logs are uncommon. Mixed fire regimes and ground fires of variable return intervals maintain these woodlands typically with a shrub-dominated or patchy shrub layer, depending on climate, degree of soil development, and understory density. Historically, many of these woodlands and savannas lacked the shrub component as a result of 3- to 7-year fire-return intervals (NatureServe 2012).

The Northern Rocky Mountain Western Larch Savanna system is a large patch type restricted to the interior montane zones of the Pacific Northwest in northern Idaho. Western larch dominates although stands may be co-dominated by Douglas-fir or lodgepole pine. Many western larch stands and mixed conifer stands with larch are early to mid-seral components of the mixed to high severity fire systems (NatureServe 2012).

Northern Rocky Mountain Mesic Montane Mixed Conifer Forest is dominated by species western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*). Occurrences generally are found on all slopes and aspects but grow best on sites with high soil moisture, such as toe slopes and bottomlands. At the periphery of its distribution, this system is confined to moist canyons and cooler, moister aspects. Generally these are moist, non-flooded or upland sites that are not saturated yearlong. The composition of the herbaceous layer reflects local climate and degree of canopy closure; it is typically highly diverse in all but closed-canopy conditions (NatureServe 2012).

Rocky Mountain Poor-Site Lodgepole Pine Forest and Rocky Mountain Lodgepole Pine Forest are similar upper montane to subalpine elevation mixed conifer forests. In general, these are mixed conifer forests where the dominance of lodgepole pine (*Pinus contorta*) is related to fire history and topo-edaphic conditions. Following stand-replacing fires, lodgepole pine will rapidly colonize and develop into dense, even-aged stands and then persist on these sites that are too extreme for other conifers to establish. Most forests in these ecological systems occur as early- to mid-successional forests which developed following fires. In some cases, stands are open to dense and may be multi-aged, not just even-aged. These forests are dominated by lodgepole pine with shrub, grass, or barren understories (NatureServe 2012).

The Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland is a high-elevation ecological system within the Mixed Conifer Forest subtype in Segment 2. Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland is distinguished by its occurrence on mesic to wet microsites within the matrix of the drier (and warmer) subalpine or lodgepole pine forests. This high-elevation Mixed Conifer Forests subtype contributes a relatively minor amount and will not be described in detail.

The Rocky Mountain Aspen subtype is comprised of the Rocky Mountain Aspen Forest and Woodland and Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland ecological systems. These widespread ecological systems occur across the intermountain west. Elevations generally range from 5,000-10,000 feet, but occurrences can be found at lower elevations in some regions. Distribution of these ecological systems is primarily limited by adequate soil moisture required to meet its high evapotranspiration demand. Secondarily, it is limited by the length of the growing season or low temperatures. These are upland forests and woodlands dominated by quaking aspen without a significant conifer component (<25 percent relative tree cover). The understory structure may be complex with multiple shrub and herbaceous layers, or simple with just an herbaceous layer. The herbaceous layer may be dense or sparse, dominated by graminoids or forbs. Occurrences of Rocky Mountain Aspen Forest and Woodland originate and are maintained by stand-replacing disturbances such as avalanches, crown fire, insect outbreak, disease and windthrow, or clearcutting by man or beaver, within the matrix of conifer forests (NatureServe 2012).

The Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland ecological system is similar except that it is composed of a mix of deciduous and coniferous species, co-dominated by quaking aspen and conifers, including Douglas-fir, white fir (*Abies concolor*), subalpine fir, Engelmann spruce, white spruce (*Picea glauca X engelmannii*), blue spruce (*Picea pungens*), lodgepole pine, limber pine (*Pinus flexilis*), and ponderosa pine. Most occurrences at present represent a late-seral stage of aspen changing to a pure conifer occurrence. Nearly a hundred years of fire suppression and livestock grazing have converted much of the pure aspen occurrences to the present-day aspen-conifer forest and woodland ecological system (NatureServe 2012).

Wetlands, Riparian, and Surface Waters

Wetlands and riparian area communities and surface water occur within the analysis areas of the Proposed Action and all alternatives in Segment 2 (Table 3-38). Wetlands in this segment consist primarily of marsh habitats, and riparian wetland communities.

Emergent wetlands in Segment 2 are typically surrounded by savanna, shrub-steppe, steppe, or desert vegetation. Natural marshes may occur in depressions in the landscape, as fringes around lakes, and along slow-flowing streams and rivers. Marshes are frequently or continually inundated, with water depths up to 6 feet. Water levels may be stable, or may fluctuate 3 feet or more over the course of the growing season. Water chemistry may include some alkaline or semi-alkaline situations, but the alkalinity is highly variable even within the same complex of wetlands. Marshes have distinctive soils that are typically mineral, but can also accumulate organic material. Soils have characteristics that result from long periods of anaerobic conditions in the soils. The vegetation is characterized by herbaceous plants that are adapted to saturated soil conditions (NatureServe 2012).

Riparian areas in Segment 2 are typical of low-elevation riparian areas found on the periphery of the mountains surrounding the Columbia River Basin, along major tributaries and the main stem of the Columbia at relatively low elevations. These riparian areas are associated with all streams at and below lower tree line, including permanent, intermittent and ephemeral streams with woody riparian vegetation. They are found in low-elevation canyons and draws, on floodplains, or in steep-sided canyons, or narrow V-shaped valleys with rocky substrates. Sites are subject to temporary flooding during spring runoff. Underlying gravels may keep the water table just below the ground surface and are favored substrates for cottonwood. Large bottomlands may have large occurrences, but most have been cut over or cleared for agriculture. Rafted ice and logs in freshets may cause considerable damage to tree boles. Beavers crop younger cottonwood and willows and frequently dam side channels occurring in these stands. In steep-sided canyons, streams typically have perennial flow on mid to high gradients. Grazing is a major influence in altering structure, composition, and function of the community. Exotic trees of Russian olive (*Elaeagnus angustifolia*) and saltcedar (*Tamarix* spp.) are common in some stands that extend into moderately high intermountain basins where the adjacent vegetation is sage steppe (NatureServe 2012).

Bare Ground, Cliffs, Talus

Bare ground, cliffs, and talus are relatively limited in Segment 2 (Table 3-38) and are comprised by the Inter-Mountain Basins Active and Stabilized Dune, Inter-Mountain Basins Playa, Columbia Plateau Ash and Tuff Badland, Inter-Mountain Basins Cliff and Canyon ecological systems. The Inter-Mountain Basins Playa ecological system which occurs in greater amounts in Segment 2 than other segments is composed of barren and sparsely vegetated playas (generally <10 percent plant cover) found in the intermountain western U.S. Salt crusts are common throughout, with small saltgrass beds in depressions and sparse shrubs around the margins. These systems are intermittently flooded. The water is prevented from percolating through the soil by an impermeable soil sub-horizon and is left to evaporate. Soil salinity varies greatly with soil moisture and greatly affects species composition. The remaining bare ground, cliffs, and talus ecological systems are more extensive in Segments 4 and 5 and will be discussed in more detail there (NatureServe 2012).

Agriculture

Agriculture is a very minor land cover component within the analysis areas of the Proposed Action and alternatives in Segment 2 (Table 3-38; Figure 3-9). In general, pastures and hayfields make up the majority of these areas. Pasture/Hay lands are fields dedicated to the use of feeding domestic livestock or used for the production of hay for the winter feed of domestic livestock. Pasture or hay lands may be irrigated or left dependent on the natural precipitation regime of the area. These agriculture lands typically have perennial herbaceous cover (e.g. regularly shaped plantings) used for livestock grazing or the production of hay. There are obvious signs of management such as irrigation and haying that distinguish it from natural grasslands (NatureServe 2012).

Developed/Disturbed

Developed areas in Segment 2 are primarily composed of rural areas on the outskirts of La Grande, Oregon that have been modified at low to medium levels which primarily include areas. These areas are primarily associated with rural ranches operations and are relatively limited within Segment 2 (Table 3-38).

Federally Listed and Candidate Species

Howell's spectacular thelypody (*Thelypodium howellii* ssp. *spectabilis*), also known as Howell's thelypody, was included as a federally threatened species on June 25, 1999 (64 Federal Register [FR] 28393). It is known from only Union, Baker, and Malheur counties, Oregon, with presently documented populations restricted to the Baker Powder Valley and the Willow Valley (Table 3-35). Howell's spectacular thelypody is found in alkali meadows that are seasonally wet in the spring; between 3,000 and 3,500 feet elevation. Thelypody habitat typically has not been disturbed by agriculture and is dominated by basin wildrye with greasewood and alkali saltgrass (*Distichlis stricta*) (USFWS 2002). It has a Global Status of G2T1 (critically imperiled) because of being a narrow endemic with much of the habitat having been destroyed and only a few historical populations remaining. Of the 12 documented populations, only 2 are protected (USFWS 2002). The habitat of Howell's spectacular thelypody has been disturbed primarily for agriculture uses although grazing, invasive species, and other human activities also threaten the species. This biennial species is short-lived and depends on frequent seed production for its continued survival. This species also needs adequate moisture to thrive; therefore, droughts can have adverse impacts to the species (CPC 2010).

There are two known occurrences of Howell's spectacular thelypody within the 5 miles analysis area of the Proposed Action and alternatives in Segment 2. However, there are no known occurrences within the right-of-way.

Special Status Species

Although four special status species are known to occur in Segment 2 (Table 3-36), only two species, Douglas' clover and Oregon semaphore grass, have been identified by the BLM as high priority species for detailed discussion.

Douglas' Clover (Oregon BLM Sensitive, USFS Sensitive)

Douglas' clover (*Trifolium douglasii*) occurs in three states and is known from wet meadows, often along creeks, riparian meadows, moist areas along trails, open grasslands and shrubland; in clay soil, thin soils over basalt and on rocky basalt soil; reported from 3,400 to 7,000 feet elevation; in plant communities dominated by *Pseudoroegneria spicata* and *Festuca idahoensis*, interspersed with scablands dominated by Sandberg bluegrass and threetip sagebrush (*Artemisia tripartita*)(CPNH 2013, INPS 2000, IRHN 2013, NatureServe 2013, OFP 2012). Its Global Status is G2 (imperiled) due to being restricted to a small area in northeast Oregon, southeast Washington, and adjacent Idaho. It is rare throughout its range and threatened by grazing and by agricultural conversion (NatureServe 2013). Livestock grazing is a threat to the Oregon populations, but populations persist when grazing pressure is lessened. When grazed heavily, only a few plants may exist and few native species can be found.

Rotation of livestock which allow cattle on only after mid-September appears to maintain populations through increased seed recruitment (INPS 2000).

Oregon Semaphore Grass (Oregon BLM Sensitive, USFS Sensitive, State Threatened)

Oregon semaphore grass (*Pleuropogon oregonus*), also known by the scientific name *Lophochlaena oregona*, are centered in two very distinct locations in Oregon (one in Union County), separated by about 230 mi (370 km). It occupies dry meadows, wet seeps, wet sedge meadows, valley bottoms, slow moving creek channels and sloughs usually in standing water; in silt loam, clay, muck and residual soils from basalt substrate; reported from 3,600 to 5,600 feet elevation; associated with plant communities dominated by *Deschampsia caespitosa* and *Deschampsia caespitosa-Hordeum brachyantherum* (CPC 2012, CPNH 2013, IRHN 2013, NatureServe 2013, ODA 2012a). Oregon semaphore grass has a Global Status of G1 (critically imperiled) and is known from only eight occurrences. The total number of plants is unknown due to the difficulty in identifying an individual. Plant numbers may be very low. A portion of one population is being protected by The Nature Conservancy. Otherwise all sites are on private land with no protections. Changes in hydrology or grazing regime thus threaten all natural populations. Climate change may further reduce suitable habitat (NatureServe 2013). In Segment 2, Oregon semaphore grass populations occur within the analysis area of the Proposed Action only.

Noxious Weeds

There are 56 noxious or invasive weeds documented as occurring within Segment 2. These plants include all those listed on federal, state and county noxious weed lists, although it is not a comprehensive list of every invasive plant species or noxious weed that could potentially occur within Segment 2.

Rush skeletonweed is reported by ODA (2012b) to be of widespread distribution in Umatilla County, Oregon. It inhabits disturbed soils of roadsides, croplands, especially irrigated grain fields, semi-arid pastures, rangelands, and residential properties. It grows best on well-drained, sandy or gravelly soils in climates with cool winters and hot, relatively dry summers without prolonged drought. The plant spreads primarily by seed, but roots scattered by cultivation can aid in spread. Plants are highly competitive for water and nutrients. It is known as a noxious weed in cultivated and agricultural habitats but it also appears to have a limited, but measurable, impact in native species habitats. Most of the negative impacts are a result of a very deep tap root that allows for persistence, as well as ability to remove moisture and nutrients from the root zone. It's impressive reproductive ability, through both vegetative and seed ensure a large supply of propagules (NatureServe 2012).

Segment 3—Baker Valley

Vegetation Communities

Segment 3 occurs in the Baker Valley in the Blue Mountains ecoregion (Table 3-34; Figure 3-6). Shrublands are the predominant vegetation community within the Segment 3 analysis areas (Table 3-38; Figure 3-10). The primary vegetation communities within the B2H Project area are discussed in detail below with additional descriptions of community subtypes and ecological systems.

Grasslands

Grasslands are the second largest vegetation community within Segment 2 (Table 3-38; Figure 3-10). Native and non-native grassland subtypes occur roughly equally within the analysis areas of the Proposed Action and all alternatives (Table 3-39). The predominant native grassland ecological systems in Segment 3 include Columbia Plateau Steppe and Grassland, Inter-Mountain Basins Semi-Desert Grassland, and Columbia Basin Foothill and Canyon Dry Grassland which were previously described in Segment 1. Other native grassland ecological systems that occur to lesser extents include Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland and Rocky Mountain Subalpine-Montane Mesic Meadow which were previously described in Segment 2.

Non-native grasslands typically are dominated by cheatgrass and Medusahead rye. As with all the segments, non-native grasslands occur in areas that have experienced past disturbance and occur in the analysis areas of the Proposed Action and alternative (Table 3-39).

Shrublands

Shrubland communities comprise the vast majority of the analysis areas of the Proposed Action and most of the alternatives in Segment 1 (Table 3-38; Figure 3-10). Shrubland and Forest/Woodlands have roughly equal representation along the Timber Canyon Alternative. Although all shrubland subtypes are represented in the analysis areas, Big Sagebrush Steppe and Mountain Shrub subtypes are the most predominant (Table 3-40).

Dwarf Sagebrush Steppe is common in Segment 3 (Table 3-40) and includes the Columbia Plateau Low Sagebrush Steppe and Columbia Plateau Scabland Shrubland ecological systems. These ecological systems are primarily differentiated by the dwarf sagebrush species that dominates them and elevation.

Columbia Plateau Low Sagebrush Steppe forms a matrix ecological system is composed of sagebrush dwarf-shrub-steppe that occurs in a variety of shallow-soil habitats throughout eastern Oregon, northern Nevada and southern Idaho. Low sagebrush and close relatives (*Artemisia arbuscula* ssp. *longiloba* and occasionally *Artemisia nova*) form stands that typically occur on mountain ridges and flanks and broad terraces, ranging from 3,300 to 9,850 feet in elevation. Substrates are shallow, fine-textured soils, poorly drained clays, and shallow-soiled areas, almost always very stony, characterized by recent rhyolite or basalt. Many forbs also occur and may dominate the herbaceous vegetation, especially at the higher elevations. Isolated individuals of *Juniperus occidentalis* (western juniper) and *Cercocarpus ledifolius* (mountain-mahogany) can often be found in this system (NatureServe 2012).

Columbia Plateau Scabland Shrubland is found in the Columbia Plateau region and forms extensive low shrublands. These xeric shrublands occur under relatively extreme soil-moisture conditions. Substrates are typically shallow lithic soils with limited water-holding capacity over fractured basalt. Because of poor drainage through basalt, these soils are often saturated from fall to spring by winter precipitation but typically dry out completely to bedrock by midsummer. Total vegetation cover is typically low, generally less than 50 percent and often much less than that. Vegetation is characterized by an open dwarf-shrub canopy dominated by scabland sagebrush (*Artemisia rigida*) along with other shrub and dwarf-shrub species, particularly buckwheat (*Eriogonum* spp.). Other shrubs are uncommon in this system; mixes of scabland sagebrush and other *Artemisia* species typically belong to different ecological systems than this. Low cover of perennial bunch grasses as well as scattered forbs characterize these sites. Individual sites can be dominated by grasses and semi-woody forbs. Annuals may be seasonally abundant, and cover of moss and lichen is often high in undisturbed areas (1-60 percent cover) (NatureServe 2012).

Big Sagebrush Steppe is the most dominant shrubland subtype in Segment 3 (Table 3-40) and includes Inter-Mountain Basins Big Sagebrush Steppe, and Inter-Mountain Basins Big Sagebrush Shrubland similar to Segment 1 described above. Great Basin Xeric Mixed Sagebrush Shrubland also contributes greatly to big sagebrush steppe in Segment 3 and is described below. Inter-Mountain Basins Semi-Desert Shrub Steppe big sagebrush shrublands occur in low amounts in Segment 3. These big sagebrush shrublands are associated with the Northern Basin and Range and are described in Segment 6 where they are more common and their discussion is more appropriate. The mountain big sagebrush community of the Inter-Mountain Basins Montane Sagebrush Steppe ecological system occurs at the higher elevations in Segment 3 and was described previously in Segment 2.

The big sagebrush steppe of the Great Basin Xeric Mixed Sagebrush Shrubland ecological system occurs in the Great Basin on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, saddles and ridges at elevations between 3,300 and 8,550 feet. Sites are dry, often exposed to desiccating winds, with typically shallow, rocky, non-saline soils. Shrublands are dominated by black sagebrush (*Artemisia nova*)(mid and low elevations), little sagebrush (*Artemisia arbuscula ssp. longicaulis*, or *Artemisia arbuscula ssp. longiloba*)(higher elevation) and may be co-dominated by Wyoming big sagebrush. The herbaceous layer is likely sparse and composed of perennial bunch grasses.

Desert Shrub is a minor component of the vegetation community in Segment 3 (Table 3-40). Similar to Segment 1, the Inter-Mountain Greasewood Flat ecological system occurs in relatively low amounts in Segment 3, and is described in Segment 5 below where its discussion in more appropriate.

Forests/Woodlands

With the exception of the Timber Canyon Alternative, Forests/Woodlands comprise a relatively small amount of the vegetation communities in Segment 3 (Table 3-38; Figure 3-10). Although all forest and woodland subtypes are represented in the analysis areas, the Juniper and Mahogany Woodland is the most predominant (Table 3-41). In general, the Mixed Conifer Forests and Rocky Mountain Aspen subtypes are more limited.

Mixed Conifer Forests and Rocky Mountain Aspen are relatively limited in the analysis areas of the Proposed Action and most alternative; however they are dominant along the Timber Canyon Alternative (Table 3-41). Mixed Conifer Forests and Rocky Mountain Aspen in the analysis areas of the Timber Canyon Alternative are represented by the same ecological systems as those described in Segment 2. Mixed Conifer Forests in the analysis areas of the Proposed Action and the remaining alternatives are primarily comprised of the Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Northern Rocky Mountain Ponderosa Pine Woodland and Savanna ecological systems and have been previously described in Segment 2.

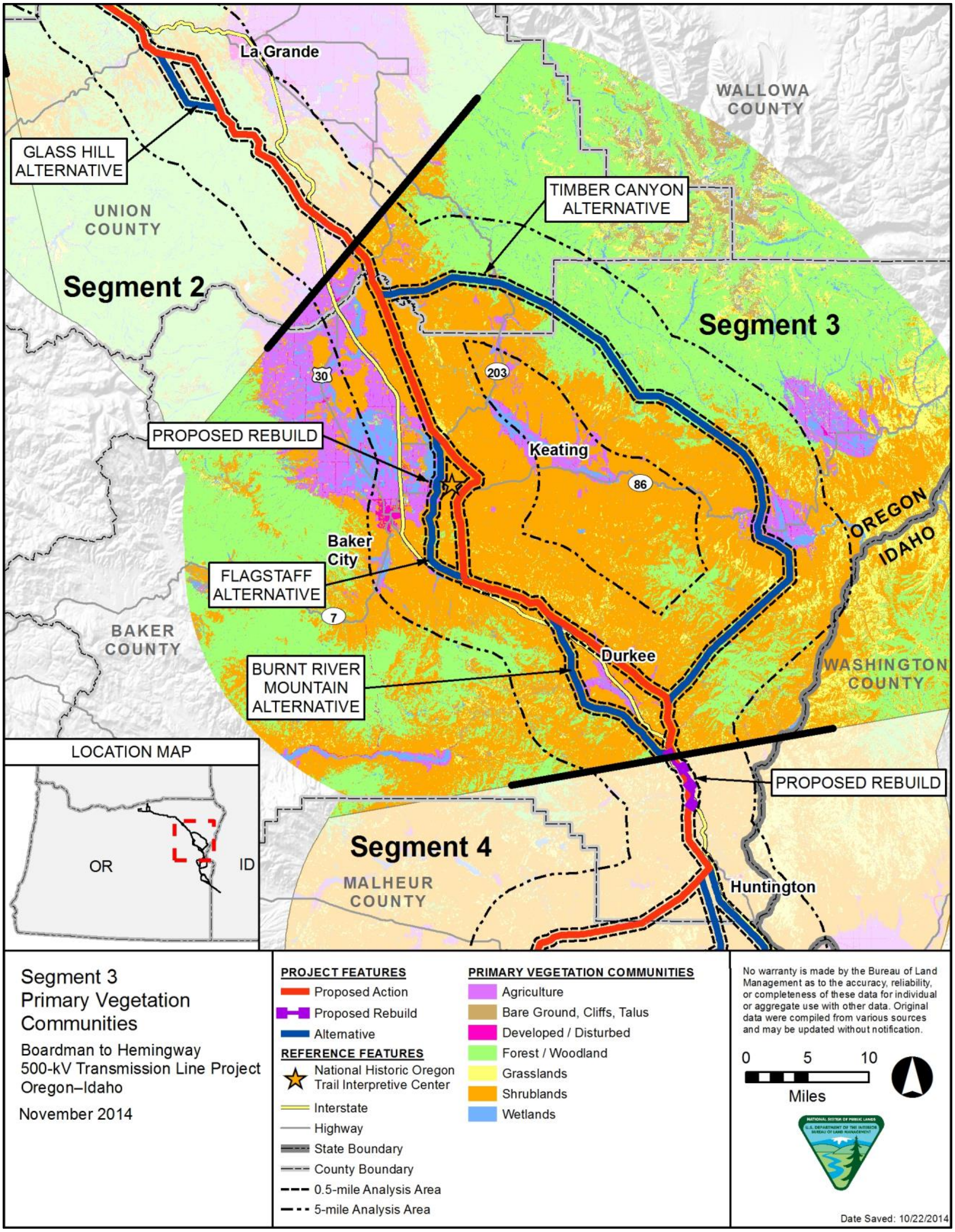


Figure 3-10. Segment 3 Primary Vegetation Communities

Juniper and Mahogany Woodland in the most dominant Forest/Woodland subtype in Segment 3 (Table 3-41) and includes the Columbia Plateau Western Juniper Woodland and Savanna and Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland ecological systems. Mahogany woodlands are typically not extensive and intermixed within a juniper woodland and big sagebrush steppe matrix.

Columbia Plateau Western Juniper Woodland and Savanna is a woodland system with soils which are medium-textured, with abundant coarse fragments, and derived from volcanic parent materials. In central Oregon, the center of distribution, all aspects and slope positions occur. Where this system grades into relatively mesic forest or grassland habitats, these woodlands become restricted to rock outcrops or escarpments with excessively drained soils. Singleleaf pinyon (*Pinus monophylla*) is not present in this region, so western juniper (*Juniperus occidentalis*) is the only tree species, although ponderosa pine may be present in some stands. Mountain mahogany may occasionally co-dominate. Big sagebrush is the most common shrub. These woodlands are generally restricted to rocky areas where fire frequency is low. Throughout much of its range, fire exclusion and removal of fine fuels by grazing livestock have reduced fire frequency and allowed western juniper seedlings to colonize adjacent alluvial soils and expand into the shrub-steppe and grasslands. Western juniper savanna may occur on the drier edges of the woodland where trees are intermingling with or invading the surrounding grasslands and where local edaphic or climatic conditions favor grasslands over shrublands (NatureServe 2012).

The woodland of the Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland ecological system occurs in hills and mountain ranges of the Intermountain West basins. It typically occurs from 1,950 m to over 8,700 feet in elevation on rocky outcrops or escarpments and forms small- to large-patch stands in forested areas. Most stands occur as shrublands on ridges and steep rimrock slopes, but they may be composed of small trees in steppe areas. Scattered junipers or pines may also occur. This system includes both woodlands and shrublands dominated by Curl-leaf Mountain Mahogany *(Cercocarpus ledifolius*). Mountain big sagebrush (*Artemisia tridentata ssp. Vaseyana*), antelope bitterbrush (*Purshia tridentata*), and other mountain shrubs are often present. Undergrowth is often very sparse and dominated by bunch grasses. Curl-leaf mountain mahogany is a slow-growing, drought-tolerant species that generally does not re-sprout after burning and needs the protection from fire that rocky sites provide (NatureServe 2012).

Wetlands, Riparian, and Surface Water

Wetlands and riparian area communities and surface water occur within the analysis areas of the Proposed Action and all alternatives in Segment 3 (Table 3-38). Wetlands in this segment consist primarily of marsh habitats and riparian wetland communities and are similar to those described previously in Segment 2.

Bare Ground, Cliffs, and Talus

The bare ground, cliffs, and talus ecological systems that occur within Segment 3 are more extensive in Segments 4 and 5 and will be discussed in more detail there.

Agriculture

Although agriculture in the Baker Valley is an important economic activity, agricultural are relatively small land cover component within the analysis areas of the Proposed Action and alternatives in Segment 3 (Table 3-38; Figure 3-10). In general, row crops, pastures and hayfields make up the majority of these areas. This land cover type has been described previously in previous segments.

Developed/Disturbed

Developed areas in Segment 3 are primarily composed of rural areas on the periphery of Baker City and Richland, Oregon that have been modified at low to medium levels. These areas are primarily associated with rural residences and agricultural operations and are relatively limited within Segment 3 (Table 3-38).

Federally Listed and Candidate Species

There are no known occurrences of Howell's spectacular thelypody in Segment 3, but there is potential habitat. A thorough description of this species is provided in Segment 2 above.

Special Status Species

Although 19 special status species are known to occur in Segment 3 (Table 3-36), only three species, Cusick's lupine, Malheur prince's plume, and stalked moonwort, have been identified by the BLM as high priority species for detailed discussion. Only Malheur prince's plume and Snake River goldenweed are discussed in the Environmental Consequences.

Malheur Prince's Plume (Oregon and Idaho BLM Sensitive, State Candidate)

Malheur prince's plume (*Stanleya confertiflora*), also known as Oregon princes plume or biennial stanleya, occurs in three counties in Oregon, including Baker and Malheur counties, as well as in Owyhee County, Idaho where it is known from scattered populations that tend to be small and local. Found on barren clay hills and slopes, open nearly barren soft loamy (dune-like) hills, somewhat barren west-facing slopes, dry sandy ground and dry banks; in adobe clay, red sandy soil and soils covered with pale gray chips of diatomite; reported from 2,200 to 7,300 feet elevation; associated with sagebrush, sagebrush-steppe, or buckwheat (*Eriogonum* spp.) dominated habitats (CPNH 2013, IRHN 2013, NatureServe 2013, OFP 2012). Malheur prince's plume has a Global Status of G2 (imperiled), because it occurs as scattered populations that tend to be small and local. Its generalized range is about 5,400 square miles. Threats are weed invasion, seeding projects, motorized off-road-vehicle riding through populations, mining claims at or near several populations, road repair projects, and livestock grazing and trampling (NatureServe 2013). With the exception of the Flagstaff Alternative, Malheur prince's plume populations occur within the analysis areas of the Proposed Action and remaining alternatives (see Table 3-50 in Section 3.2.3.6).

Snake River Goldenweed (Oregon BLM Sensitive, State Endangered)

Snake River goldenweed (*Pyrrocoma radiata* syn. *Haplopappus radiata*), also known as ray goldenweed, is endemic to Idaho and Oregon on the lower confines of the Snake River Canyon and adjacent slopes. Found on xeric scablands with scant vegetation, ridges, a cemetery (disturbed and undisturbed areas), moderately steep, mostly south-facing slopes, moist slopes; in grey shale, shallow coarse stony or rocky basalt derived soils; reported from 2,320 to 5,400 feet elevation; associated with the following community types: *Artemisia tridentata-Purshia tridentata* / *Pseudoroegneria spicata-Leymus cinerus-Bromus tectorum* Shrubland, *Rosa* sp.-*Artemisia tridentata* / *Pseudoroegneria spicata-Poa sandbergii* Shrubland and *Pseudoroegneria spicata* Herbaceous Vegetation (IRHN 2013, NatureServe 2013, OFP 2012). It has a Global Status of G3 (vulnerable), due to being known from sixty-nine total occurrences in a restricted range. This species is threatened by overgrazing, which has caused mass introduction of annual grasses. Damage from grasshoppers is also important. Also this species is threatened by conversion of land to agriculture, water level fluctuations at Brownlee Reservoir, road construction and maintenance, and mining operations. Most of the populations occur on federal lands (NatureServe 2013). With the exception of the Timber Canyon and Flagstaff Alternatives, Snake River goldenweed populations occur within the analysis areas of the Proposed Action and remaining alternative (see Table 3-50 in Section 3.2.3.6).

Noxious Weeds

Fifty-nine noxious or invasive weeds are documented as occurring within Segment 3. These plants include all those listed on federal, state and county noxious weed lists, although it is not a comprehensive list of every invasive plant species or noxious weed that could potentially occur within Segment 3.

Puncturevine is abundant in Union County, Oregon (UCNWA 2012). It spreads by seeds easily transported by humans, animals, and vehicles. It is most often found on sandy, dry, or gravely sites and can survive drought and poor soil conditions. This species can infest fields, rangelands, roadsides, and other disturbed areas by forming dense mats. Plants produce sharply pointed burs that stick painfully in bare feet and cause bicycle flats, reducing the recreational potential of many areas. Even light truck tires can be punctured by seeds (IDA 2012, UCNWA 2012).

Purple loosestrife is listed by UCNWA (2012) as abundant in Union County, Oregon and is listed by ODA (2012b) as having widespread distribution in Malheur County, Oregon. It degrades wetlands, and food species are rapidly displaced by this weed, which has no wildlife value. It spreads both by seed and spreading rhizomes that form dense, woody mats. This extremely invasive species has the potential to completely dominate a wetland setting, forming a vast, monotypic stand. It can crowd out, out compete, and completely eliminate native species and aquatic plant layers and suppresses and eliminates native plants and seed growth. Decreased songbird and waterfowl production has been well documented in heavily infested marsh areas. It can potentially hybridize with native loosestrife, which is considered rare in some states. Seeds are easily and widely dispersed by water and the plant is extremely prolific, even in undisturbed areas (NatureServe 2012, UNNWA 2012).

Segment 4—Brogan Area

Vegetation Communities

Segment 4 occurs in three ecoregions: the Blue Mountains in the north, the Northern Basin and Range on the southwest, and the Snake River Plain on the southeast (Table 3-34; Figure 3-6). Vegetation communities within the analysis areas of the Proposed Action and alternatives however, are very similar and are most characteristic of the dry intermountain Northern Basin and Range ecoregion. Similar to Segment 3, shrublands are the predominant vegetation community within the Segment 4 analysis areas, with grasslands also occurring in large amounts (Table 3-38; Figure 3-11). The primary vegetation communities within the B2H Project area are discussed in detail below with additional descriptions of community subtypes and ecological systems.

Grasslands

Although native and non-native grasslands occur within the analysis areas of the Proposed Action and all alternatives in Segment 4, non-native grasslands are the most predominant (Table 3-39; Figure 3-11). Native grasslands are greatest along the Proposed Action, with non-natives being widespread across the entire segment (Table 3-39). The ecological systems of the native grasslands subtype are the same as those found in and described in Segments 1 and 2 with the Columbia Plateau Steppe and Grassland being the most dominant in Segment 4. Non-native grasslands dominated by cheatgrass comprise the bulk of this subtype and are most extensive within the analysis areas of the Willow Creek and Tub Mountain South Alternatives (Table 3-39).

Shrublands

Shrubland communities comprise the majority of the analysis areas of the Proposed Action and alternatives in Segment 4 (Table 3-38; Figure 3-11). Although all shrubland subtypes are represented in the analysis areas, Big Sagebrush Steppe is the most predominant with Dwarf Sagebrush Steppe and Mountain Shrub subtypes occurring in roughly equal by sizeable amounts (Table 3-40).

Big Sagebrush Steppe is the principal shrubland subtype in Segment 4 (Table 3-40) and is predominantly comprised by the Inter-Mountain Basins Big Sagebrush Steppe and Inter-Mountain Basins Big Sagebrush Shrubland ecological systems. Big Sagebrush Steppe similar in composition to those found in Segment 3 in particular. Constituent Big Sagebrush Steppe ecological systems were previously described in Segments 1, 2, and 3.

Dwarf Sagebrush Steppe is common in Segment 4 and similar in composition to the ecological systems described in the Segment 3 (Table 3-40). Similarly, Mountain Shrub communities are also common and composed of the Northern Rocky Mountain Montane-Foothill Deciduous Shrubland ecological system described in Segment 2.

With the exception of the Tub Mountain South Alternative, Desert Shrub is a minor component of the vegetation community in Segment 4 (Table 3-40). Desert Shrub communities are similar in composition to those found in previous segments and described in Segment 1.

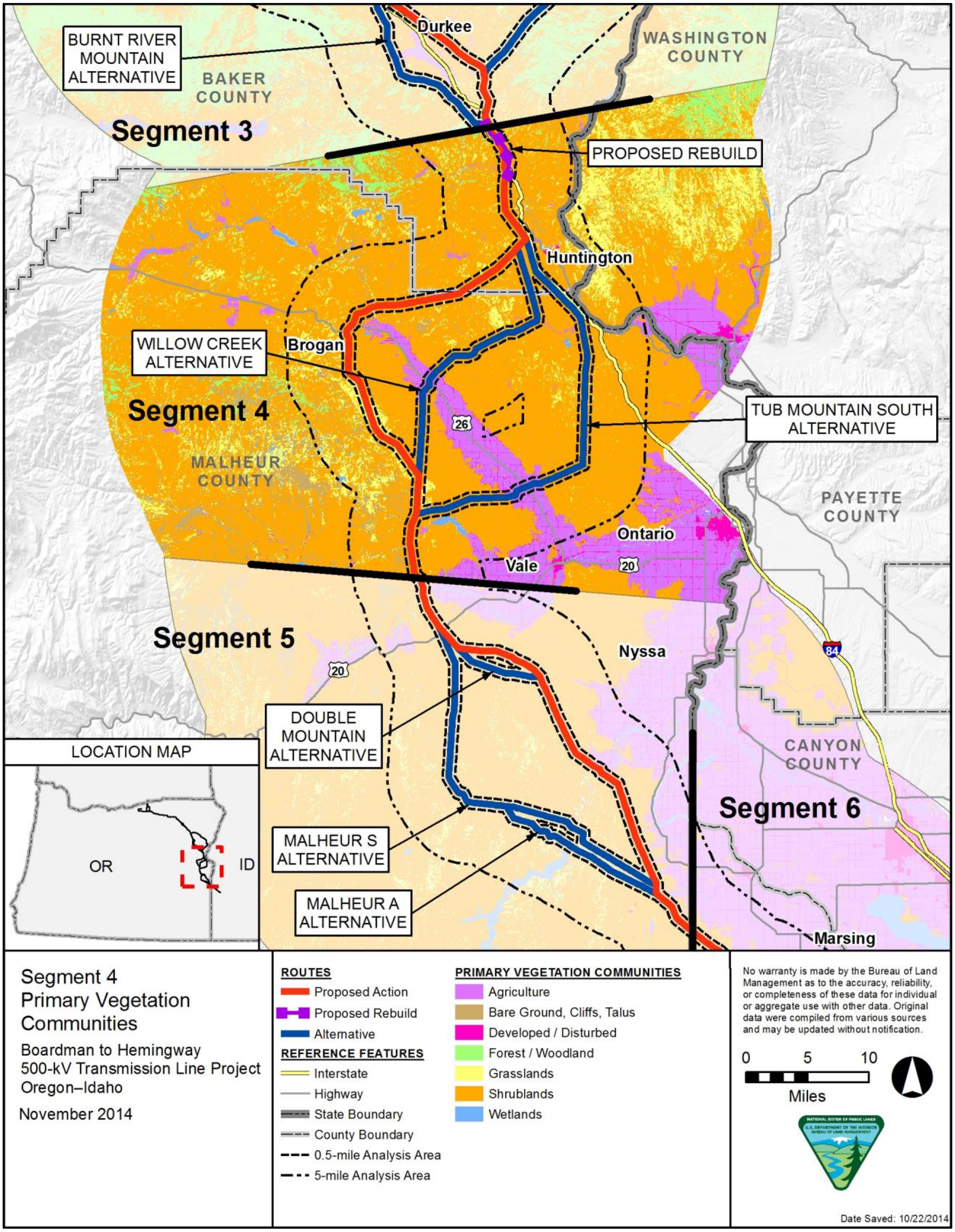


Figure 3-11. Segment 4 Primary Vegetation Communities

Forests/Woodlands

Forests/Woodlands comprise a very small amount of the vegetation communities in Segment 4 (Table 3-38; Figure 3-11). Juniper and Mahogany Woodland is the most predominant subtype, with the Mixed Conifer Forests and Rocky Mountain Aspen occurring in negligible amounts (Table 3-41). Juniper and Mahogany Woodlands in Segment 4 are similar in composition to the ecological systems described in the Segment 3.

Wetland, Riparian and Surface Water

Wetlands and riparian area communities and surface water occur within the analysis areas of the Proposed Action and all alternatives in Segment 4 (Table 3-38). Wetlands in this segment consist primarily of marsh habitats and riparian wetland communities and are similar to those described previously in Segment 2.

Bare Ground, Cliffs, and Talus

Bare ground, cliffs, and talus are more extensive in Segment 4 than in previous segments (Table 3-38), and are comprised by the Columbia Plateau Ash and Tuff Badland, Inter-Mountain Basins Active and Stabilized Dune, Inter-Mountain Basins Cliff and Canyon, Rocky Mountain Cliff, Canyon and Massive Bedrock ecological systems. The Inter-Mountain Basins Active and Stabilized Dune ecological system contributes a relatively large amount in Segment 4 and is described below. The remaining bare ground, cliffs, and talus ecological systems are more extensive in Segment 5 and will be discussed in more detail there.

The Inter-Mountain Basins Active and Stabilized Dune ecological system occurs in basins, valleys and plains. Often it is composed of a mosaic of migrating, bare dunes; anchored dunes with sparse to moderately dense vegetation (<10-30 percent canopy cover); and stabilized dunes. The system is defined by the presence of migrating dunes or, where the dunes are entirely anchored or stabilized, evidence that the substrate is eolian and not residual, that the vegetation is early- or mid-seral, and that the substrate is likely to become actively migrating again with disturbance or increased aridity.

Species occupying these environments are often adapted to shifting, coarse-textured substrates (usually quartz sand) and form patchy or open grasslands, shrublands or steppe, and occasionally woodlands. Shrubs can be dominant on mid- to late-seral stands, and rubber rabbitbrush can be found at any stage (NatureServe 2012).

Agriculture

Agriculture is an important economic activity in the Willow Creek Valley and occurs within the analysis areas of the Proposed Action and all alternatives in Segment 4 (Table 3-38; Figure 3-11). In general, row crops, pastures and hayfields make up the majority of these areas. Within Segment 4, agricultural lands are least in extent along the Proposed Action. This land cover type has been described previously in previous segments.

Developed/Disturbed

Developed areas in Segment 4 are primarily composed of rural areas on the periphery of Brogan and Vale, Oregon that have been modified at low to medium levels. These areas are primarily associated with rural residences and agricultural operations and are relatively limited within Segment 4 (Table 3-38).

Federally Listed and Candidate Species

There are no federally listed or candidate species known to occur in Segment 4.

Special Status Species

Although six special status species are known to occur in Segment 4 (Table 3-36), only three species, Cronquist's stickseed, Malheur prince's plume, and Snake River Goldenweed, have been identified by the BLM as high priority species for detailed discussion. The number of known populations of each species located within the analysis area and area of disturbance are provided in Table 3-51.

Malheur Prince's Plume (Oregon and Idaho BLM Sensitive, State Candidate)

Malheur Prince's Plume has been described in Segment 3. Malheur Prince's Plume populations occur within the analysis areas of the Proposed Action and all alternatives (Table 3-51 in Section 3.2.3.6).

Snake River Goldenweed (Oregon BLM Sensitive, State Endangered)

Snake River goldenweed has been described in Segment 3. With the exception of the Burnt River Canyon 138/69-kV rebuild alternative, Snake River goldenweed populations occur within the analysis areas of the Proposed Action and remaining alternatives (Table 3-51 in Section 3.2.3.6).

Noxious Weeds

There are 56 noxious or invasive weeds documented as occurring within Segment 4. These plants include all those listed on federal, state and county noxious weed lists, although it is not a comprehensive list of every invasive plant species or noxious weed that could potentially occur within Segment 4.

Segment 5—Malheur

Vegetation Communities

Segment 5 occurs in the Northern Basin and Range and Snake River Plain ecoregions (Table 3-34; Figure 3-6). Vegetation communities within the analysis areas of the Proposed Action and alternatives are very similar to those described in Segment 4. Shrublands are the predominant vegetation community within the Segment 5 analysis areas, with grasslands and bare ground, cliffs and talus also occurring in large amounts (Table 3-38; Figure 3-12). The primary vegetation communities within the B2H Project area are discussed in detail below with additional descriptions of community subtypes and ecological systems.

Grasslands

Non-native grasslands dominated by cheatgrass are the predominant grassland community in Segment 5 (Table 3-39; Figure 3-12). In general, native grasslands similar to those found and described in Segments 1 and 2 are relatively limited along the Proposed Action and alternatives in Segment 5; the Columbia Plateau Steppe and Grassland ecological system being the most common.

Shrublands

Shrubland communities comprise the majority of the analysis areas of the Proposed Action and alternatives in Segment 5 (Table 3-38; Figure 3-12). Although all shrubland subtypes are represented in the analysis areas, Big Sagebrush Steppe is the most predominant (Table 3-40).

Desert Shrubs found in the arid canyons and lower elevations of this segment are also represented in the shrubland community. Along with the Inter-Mountain Basins Mixed Salt Desert Scrub ecological system, the Inter-Mountain Basins Greasewood Flat is well represented along the Proposed Action and alternatives (Table 3-40).

The Inter-Mountain Basins Greasewood Flat ecological system typically occurs near drainages on stream terraces and flats or may form rings around more sparsely vegetated playas. Sites typically have saline soils, a shallow water table and flood intermittently, but remain dry for most growing seasons. The water table remains high enough to maintain vegetation, despite salt accumulations. This system usually occurs as a mosaic of multiple communities, with open to moderately dense shrublands dominated or co-dominated by greasewood (*Sarcobatus vermiculatus*). Other shrubs may be present to co-dominant in some occurrences. Occurrences are often surrounded by mixed salt desert scrub or big sagebrush shrublands. The herbaceous layer, if present, is usually dominated by graminoids (NatureServe 2012).

Big Sagebrush Steppe is the principal shrubland subtype in Segment 5 (Table 3-40) and is predominantly comprised by the Inter-Mountain Basins Big Sagebrush Steppe ecological system. Big Sagebrush Steppe is similar in composition to those found in Segments 3 and 4. Constituent Big Sagebrush Steppe ecological systems were previously described in Segments 1, 2, and 3.

Dwarf Sagebrush Steppe and Mountain Shrub communities occur in limited amounts in Segment 5 and are similar in composition to those in Segment 4 (Table 3-40).

Forests/Woodlands

Forests/Woodlands comprise a very small amount of the vegetation communities in Segment 5 (Table 3-38; Figure 3-12). Mixed Conifer Forests comprised of the Northern Rocky Mountain Ponderosa Pine Woodland and Savanna is the most predominant subtype, with the Rocky Mountain Aspen and Juniper and Mahogany Woodland occurring in negligible amounts (Table 3-41). Rocky Mountain Aspen and Juniper and Mahogany Woodlands in Segment 5 are similar in composition to the ecological systems described in the Segments 2 and 3.

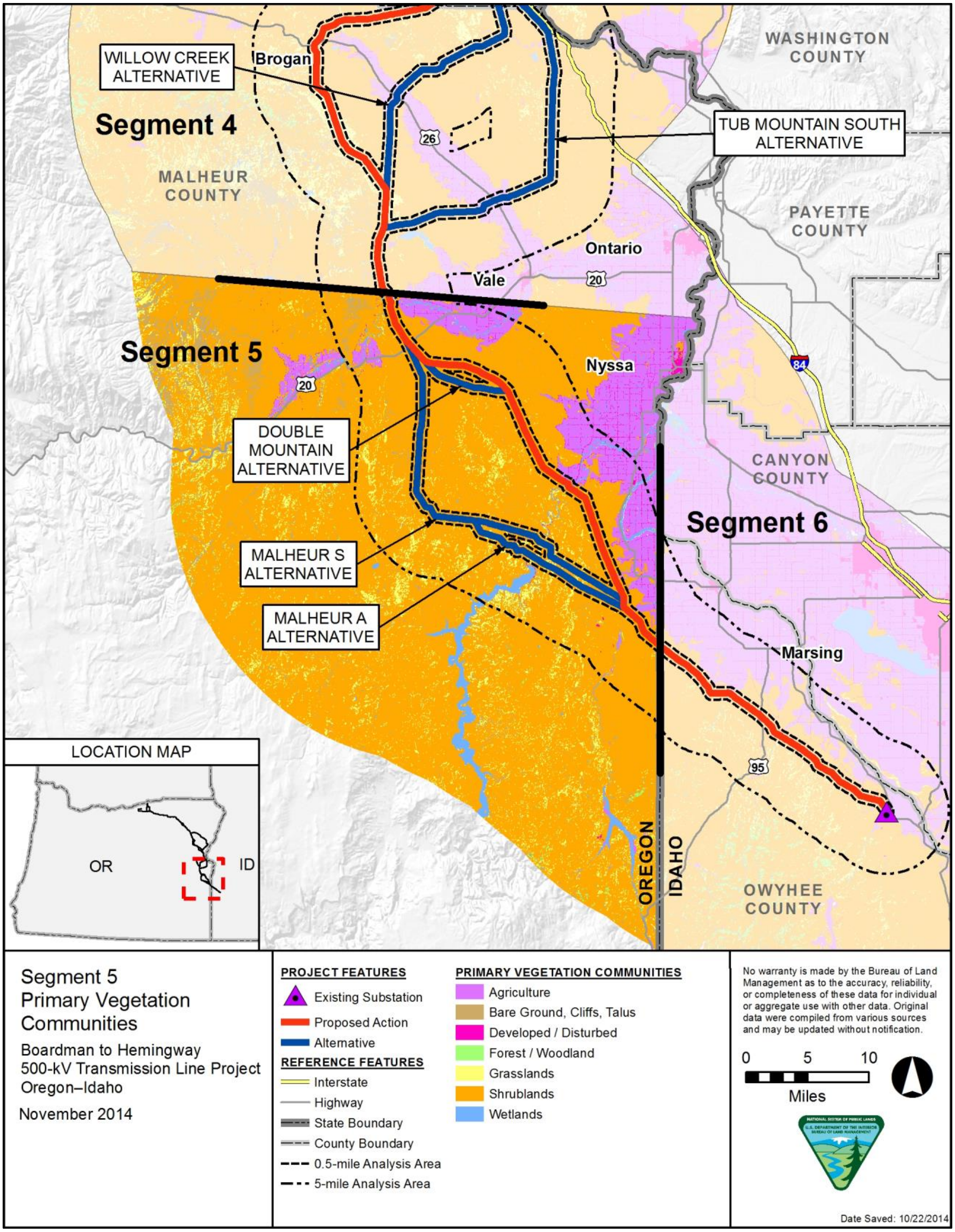


Figure 3-12. Segment 5 Primary Vegetation Communities

Wetland, Riparian and Surface Water

Wetlands and riparian area communities and surface water occur within the analysis areas of the Proposed Action and all alternatives in Segment 5 (Table 3-38). Wetlands in this segment consist primarily of marsh habitats and riparian wetland communities and are similar to those described previously in Segment 2.

Bare Ground, Cliffs, and Talus

Bare ground, cliffs, and talus are extensive within the Segment 5 analysis areas (Table 3-38). The Columbia Plateau Ash and Tuff Badland and Inter-Mountain Basins Cliff and Canyon ecological systems are widespread in Segment 5 in the Owyhee River canyonlands.

Columbia Plateau Ash and Tuff Badland is an ecological system composed of barren and sparsely vegetated substrates (<10 percent plant cover) typically derived from highly eroded volcanic ash and tuff. Landforms are typically rounded hills and plains that form a rolling topography. The harsh soil properties and high rate of erosion and deposition are driving environmental variables supporting sparse dwarf-shrubs and forbs. Characteristic forbs are short-lived annuals, including *Cleome*, *Mentzelia*, *Camissonia*, and *Mimulus* species, although these habitats often support endemic perennial forbs (NatureServe 2012).

Inter-Mountain Basins Cliff and Canyon is found from foothill to subalpine elevations and includes barren and sparsely vegetated landscapes (generally <10 percent plant cover) of steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous, sedimentary, and metamorphic bedrock types. Also included is vegetation of unstable scree and talus slopes that typically occurs below cliff faces. Widely scattered trees and shrubs may occur, along with other species often common in adjacent plant communities (NatureServe 2012).

Agriculture

Agriculture is very limited within the Segment 5 analysis areas especially along the Malheur A and S Alternatives (Table 3-38; Figure 3-12). In general, row crops in the Snake River Plain make up the majority of agricultural land cover. This land cover type has been described previously in previous segments.

Developed/Disturbed

Developed areas in Segment 5 are very limited especially in the rugged Owyhee uplands and Canyonlands (Table 3-38).

Federally Listed and Candidate Species

There are no federally listed or candidate species known to occur in Segment 5.

Special Status Species

Although 22 special status species are known to occur in Segment 5 (Table 3-36), only nine species, Cronquist's stickseed, Malheur prince's plume, Snake River Goldenweed, Greeley's wavewing, Malheur Valley fiddleneck, Mulford's milk-vetch, Owyhee clover, and sterile milk-vetch, have been identified by the BLM as high priority species for detailed discussion. The number of populations located within the analysis area and area of disturbance for each species is provided in Table 3-52 in Section 3.2.3.6.

Mulford's Milkvetch (Oregon and Idaho BLM Sensitive, State Endangered)

Mulford's milk-vetch (*Astragalus mulfordiae*) is known only from Idaho and Oregon, where found on deep sandy first river terraces, sandy beaches, gravel bars, flat to gently rolling south-east exposures, sand bowls at the crest of hills, old river deposits, sandy places near rivers, sandy bluffs and dune-like talus in foothills; in decomposed sandstone, decomposed oolitic limestone, deep sand derived from lake deposits, lacustrine ash and sand to sandy loam; reported from 2,100 to 3,200 feet elevation; associated with shrub-steppe and desert shrub communities (CPNH 2013, IRHN 2013, NatureServe 2013, OFP 2012). Its Global Status is G2 (imperiled), due to being a narrow endemic with the majority of known populations are small in number of plants and in extent. Threats include habitat destruction and degradation due to residential and agricultural development, sand mining, off-road vehicle activity, and livestock grazing, which have taken place in nearly all known populations (NatureServe 2013). Mulford's milk-vetch populations occur within the analysis areas of the Proposed Action and all alternatives (see Table 3-52 in Section 3.2.3.6).

Cronquist's Stickseed (Oregon BLM and State Threatened)

Cronquist's stickseed (*Hackelia cronquistii*), also known as Cronquist's forget-me-not, is known only from Oregon and Idaho, limited to within a twenty-mile radius of Vale, Malheur County. Found on low and rolling sandy (dry) hills and at the base of sand dunes from north, and east north-east aspects, with the majority of plants and mid or lower slopes; in sandy loam, sand, light clay soils; reported from 2,200 to 3,640 feet elevation; most commonly found in the following vegetation associations: *Artemisia tridentata* / *Poa secunda* Shrubland, *Artemisia tridentata* / *Poa secunda-Pseudoroegenaria spicata* Shrubland, *Artemisia tridentata-Purshia tridentata* / *Pseudoroegeneria spicata-Poa secunda-Achnatherum hymenoides* Shrubland and *Artemisia tridentata* / *Bromus tectorum-Poa secunda-Festuca idahoensis-Achnatherum hymenoides* Semi-natural Shrubland (OFP 2012, NatureServe 2013). Its Global Status is G3 (vulnerable), due to being a regional endemic with about 52 populations known with a total of 28,000 to 61,000 plants. This species is found mainly near the eastern border of Oregon in Malheur and Baker counties, and adjacent Idaho. Cronquist's stickseed populations occur within the analysis areas of the Proposed Action and all alternatives (see Table 3-52 in Section 3.2.3.6).

Smooth Mentzelia (Smooth Stickleaf) (Oregon and Idaho BLM Sensitive, State Endangered)

Smooth mentzelia (*Mentzelia mollis*), also known as soft blazingstar, occurs in three states. Found (in Idaho and Oregon) on a variety of habitats, including along a stream path, on outcrops and knobs and on slopes of hillsides; typically in ash soils derived from the Succor Creek Formation, also in white, green, grey and pale eroded clay, nearly barren volcanic ash-clay, unconsolidated and decomposed ash, lithosol soils, bentonite, zeolite and montmorillonite; reported from 2,500 to 4,420 feet elevation;

associated with *Artemisia tridentata–Sarcobatus vermiculatus* Shrubland, *Ericameria nauseosa-Artemisia tridentata* / *Elymus elymoides* Shrubland, often mixed in the understory with *Phacelia lutea*. (CPNH 2013, CPC 2012, IRHN 2013, NatureServe 2013, OFA 2012, OFP 2012). Its Global Status is G2 (imperiled) due to being endemic to Succor Creek Formation ash/claybed outcrops of the Owyhee Desert, with disjunct populations in the Black Rock Desert area of northern Nevada. Locally abundant on suitable substrate when available and not compacted. Oregon populations total at least 37,000 plants. Many occurrences are located in areas with mining claims. Habitat degradation threats include mineral exploration, off-road vehicle recreational activity, and range improvement programs. Smooth mentzelia does not germinate easily on compacted soil (e.g., by off-road vehicles). It does recolonize after disturbance if soil is permeable (NatureServe 2013). With the exception of the Double Mountain Alternative, Smooth mentzelia populations occur within the analysis areas of the Proposed Action and remaining alternatives (see Table 3-52 in Section 3.2.3.6).

Noxious Weeds

There are 47 noxious or invasive weeds documented as occurring within Segment 5. These plants include all those listed on federal, state and county noxious weed lists, although it is not a comprehensive list of every invasive plant species or noxious weed that could potentially occur within Segment 5.

Hairy whitetop is reported by ODA (2012b) as having widespread distribution in Malheur County, Oregon. It is common in disturbed areas of the western US in waste ground, cut-over forest, among shrubs, dry creek beds, grassy meadows, sandy flats, chaparral burns, roadsides, clay banks, abandoned fields, dry plains aspen groves, hard gravelly soils, and dry mountain slopes, less than 7,800 feet elevation (NatureServe 2012).

Musk thistle is listed by OSA (2012b) as widespread distribution in Malheur County. It spreads by seeds, often forming nearly impenetrable stands. It can grow under a wide range of environmental conditions, including prairies, grasslands, roadsides and areas of disturbance in dense woods. Prolific seed production and seeds can remain viable for up to 15 years, ensuring that control and management programs will extend over the long-term (IDA 2012, NatureServe 2012). There is some concern about native thistles and negative effects biological control agents may have on desirable species (NatureServe 2012).

Russian knapweed infestations in Malheur County, Oregon require landowners or renters with this species to control a minimum 20 percent of their annual infestation per discreet parcel of land per year. This includes the 50-foot buffer, plus additional amounts to total 20 percent of the infestation. Russian knapweed causes chewing disease in horses. It is primarily recognized as a weed of cultivated fields, orchards and pastures, but also invades nearby natural habitats with ease. It is a strong competitor, forming dense monocultures that exclude other vegetation (NatureServe 2012).

Saltcedar is reported by ODA (2012b) as having widespread distribution in Malheur County, Oregon. Seedlings of saltcedar (*Tamarix parviflora*) develop readily once established, and grow woody root systems that can reach as deep as 50 meters into soil and rock. It can extract salts from soil and water and excrete them through their branches and leaves. This species can have the following effects on ecological systems: dry up viable water sources; increase surface soil salinity; modification of hydrology; decrease native biodiversity of plants, invertebrates, birds, fish and reptiles; and increase fire risk. Management techniques that have been used to control this species include mechanical clearing - using both machinery and by hand - and/or herbicides (GISD 2012). This species is strongly targeted in Oregon for biocontrol (ODA 2011).

Segment 6—Treasure Valley

Vegetation Communities

Segment 6 occurs in more or less where the Northern Basin and Range ecoregion meets the Snake River Plain ecoregion (Table 3-34; Figure 3-6). Vegetation communities within the analysis area of the Proposed Action are most similar to those described in Segment 5. Shrublands and Grasslands are the predominant vegetation communities within the Segment 6 analysis area (Table 3-38; Figure 3-13). Bare ground, cliffs and talus and agriculture also contribute to the land cover within Segment 6. The primary vegetation communities within the B2H Project area are discussed in detail below with additional descriptions of community subtypes and ecological systems.

Grasslands

Non-native grasslands dominated by cheatgrass are the predominant grassland community in Segment 6 (Table 3-39; Figure 3-13). Native grasslands similar to those found and described in Segments 1 and 2 are very limited along the Proposed Action.

Shrublands

Shrubland communities comprise the majority of the analysis area in Segment 6 (Table 3-38; Figure 3-13). Although all shrubland subtypes are represented in the analysis areas, Big Sagebrush Steppe is the most predominant with Desert Shrubs occurring in in large amounts in the lower elevations of the Snake River Plain (Table 3-40).

Desert Shrubs are similar in composition to those found in Segment 5. Dwarf Sagebrush Steppe and Mountain Shrub communities do occur but in negligible amounts (Table 3-40).

As with the shrublands in Segments 3, 4, and 5, Big Sagebrush Steppe is the principal shrubland subtype in Segment 6 (Table 3-40) and is predominantly comprised by the Inter-Mountain Basins Big Sagebrush Steppe ecological system. Constituent Big Sagebrush Steppe ecological systems were previously described in Segments 1, 2, and 3. In addition, a low elevation ecological system also contributes to the Big Sagebrush Steppe found in Segment 6.

Intermountain Basins Semi-Desert Shrub-steppe occurs throughout the intermountain western U.S., typically at lower elevations on alluvial fans and flats with moderate to deep soils. This semi-arid shrub-steppe is typically dominated by bunchgrasses (>25 percent cover) with an open shrub to moderately dense woody layer with a typically strong graminoid layer. The woody layer is often a mixture of shrubs and dwarf-shrubs, although it may be dominated by a single species. Shadscale (*Atriplex canescens*), and big sagebrush are characteristic shrub species but do not dominate. Annual grasses, especially cheatgrass may be present to abundant. Forbs are generally of low importance and are highly variable across the range but may be diverse in some occurrences. The general aspect of occurrences may be either open shrubland with patchy grasses or patchy open herbaceous layers. Disturbance may be important in maintaining the woody component. Microphytic crust is very important in some stands (NatureServe 2012).

Forests/Woodlands

Juniper and Mahogany Woodlands occur within the Segment 6 analysis area but only in negligible amounts (Table 3-41).

Wetland, Riparian and Surface Water

Riparian areas along various canyon bottom streams and surface water occur within the Segment 6 analysis areas (Table 3-38). Riparian communities are similar to those described previously in Segment 2.

Bare Ground, Cliffs, and Talus

Bare ground, cliffs, and talus are widespread within the Segment 6 analysis area along the Owyhee Mountain Front (Table 3-38). As with Segment 5, the Columbia Plateau Ash and Tuff Badland and Inter-Mountain Basins Cliff predominates this land cover. Riparian areas along various canyon bottom streams and surface water occur within the Segment 6 analysis areas (Table 3-38). Riparian communities are similar to those described previously in Segment 2.

Agriculture

Agriculture in the form of row crops occurs in the Snake River Plain within the Segment 6 analysis area (Table 3-38; Figure 3-13). This land cover type has been described previously in previous segments.

Developed/Disturbed

Developed areas related to rural residences and agricultural operations in the Snake River Plain occur in limited amounts within the Segment 6 analysis area (Table 3-38).

Federally Listed and Candidate Species

There are no federally listed or candidate species known to occur in Segment 6.

Special Status Species

Although 18 special status species are known to occur in Segment 6 (Table 3-36), only three species, Malheur Prince's Plume, Greeley's wavewing, and smooth mentzelia, have been identified by the BLM as high priority species for detailed discussion.

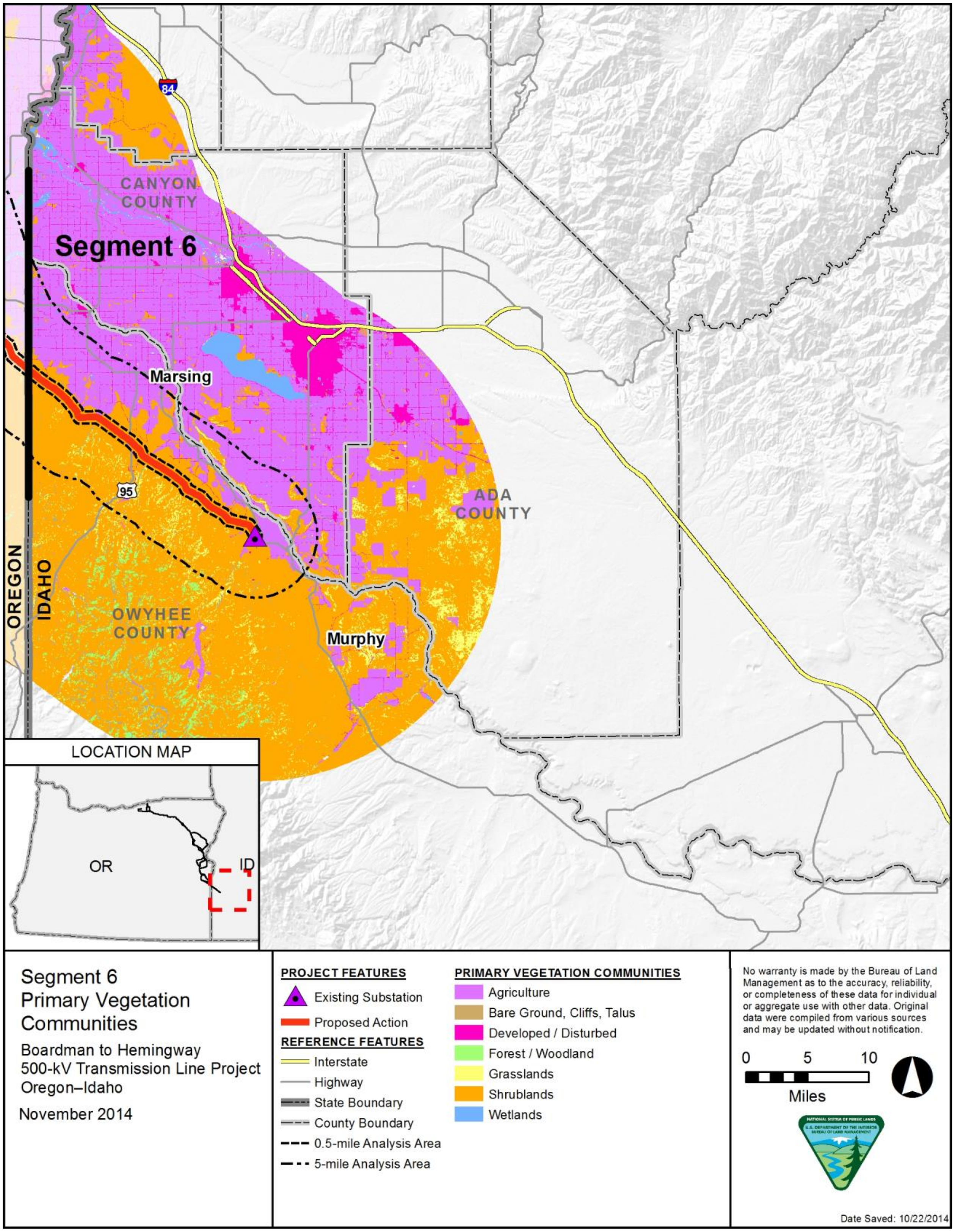


Figure 3-13. Segment 6 Primary Vegetation Communities

Noxious Weeds

There are 39 noxious or invasive weeds documented as occurring within Segment 6. These plants include all those listed on federal, state and county noxious weed lists, although it is not a comprehensive list of every invasive plant species or noxious weed that could potentially occur within Segment 6.

3.2.3.6 Environmental Consequences

Methodology

The methodology for assessing the impacts on vegetation resources and assessing the risk for the spread of noxious weeds associated with the Proposed Action and alternatives generally included the following:

1. Developing criteria for assessing the intensity of potential effects on vegetation resources
2. Identifying the types of effects that could result from construction, operation, and maintenance of the B2H Project
3. Assessing initial impacts on vegetation resources present in the analysis area, assuming the presence of special status plant species in suitable habitat types
4. Identifying applicable design features for minimizing adverse effects
5. Disclosing potential residual impacts on vegetation resources and noxious weeds (i.e., impacts anticipated after application of the design features)
6. Identifying design features to consider as part of the mitigation planning in the Final EIS

The methodology for assessing effects to first foods and ethnobotanical resources included identifying the primary vegetation community/land cover type where these resources may be found and assess the impacts to the vegetation community to establish the effects on resources within that type. Extensive loss of a community type would result in effects to first foods and ethnobotanical resources within that community.

Criteria for Assessing Intensity of Impacts

The criteria developed to assess the intensity of potential direct and indirect effects on vegetation resources are shown in Table 3-42. These criteria are based on considerations of the relative abundance of each vegetation community; regeneration time; the magnitude of anticipated impacts; additional protections for vegetation, including laws and statutes; and existing conditions. Criteria developed to assess the intensity of impacts on vegetation and sensitive plant species are based on considerations of a species legal status, regulatory protection, and susceptibility to temporary or permanent disturbances.

Table 3-42. Criteria for Assessing Direct and Indirect Impacts

Intensity of Impacts	Description
High	• Mortality of a federally endangered, threatened, or candidate plant species • Mortality of sensitive and other nonlisted plants that results in population or species-level effects • Permanent loss of habitat that would result in species- or population-wide effects for special status species and first foods • Permanent loss of habitat of federally endangered, threatened, or candidate plants • Loss or modification of primary plant habitat types that are rare, support a wide range of species, regenerate slowly, and would require substantial modification of vegetation during construction • Conversion of desirable, perennial vegetation to noxious weed/invasive grass community • Introduction of noxious weeds to agricultural lands
Moderate	• Permanent loss of important habitat for sensitive plant species and first foods • Mortality of sensitive plants that does not reduce population viability • Permanent loss of biologically important plant habitats • *Introduction of new noxious weed species to counties where previously undocumented
Low	• Temporary disturbance of sensitive or federally endangered, threatened, or candidate plant species • Temporary disturbance to habitat for first foods • Loss of habitat for nonlisted plant species that does not result in population- or species-level effects • Limited or incidental mortality of nonlisted plant species that does not result in population- or species-level effects • Loss or modification of primary plant habitat types that provide little value to wildlife, regenerate rapidly, and vegetation that is not a component of the natural landscape • New populations of known noxious weeds introduced to previously uninfested areas

For the purpose of analysis, the duration of short term effects was defined as a period of 0-3 years which includes the 24- to 30-month construction period plus 6 months for restoration and revegetation; the duration of long term effects was defined as a period up to 50 years to capture the anticipated project life (operations); and permanent effects were defined as any effect lasting longer than 50 years.

EFFECTS COMMON TO ALL ALTERNATIVES

This section addresses the impacts on vegetation resources and noxious weeds that would be common to all the alternatives during the construction, operation, and maintenance of the B2H Project. Effects particular to the alternatives are described in the project segment discussions below.

VEGETATION COMMUNITIES

The majority of direct effects to vegetation communities would occur during the initial clearing of construction areas. Construction will permanently remove existing vegetation, and also remove/crush vegetation in certain areas that will only be used during construction; these areas may incur short- or long-term impacts based on the vegetation community. During maintenance, some areas might have to be periodically cleared; for all intents and purposes, these areas should be considered long-term impacts (i.e., woodlands) as they are not given an opportunity to ever restore to their original conditions.

A permanent 250-foot-wide right-of-way would be used for the construction of the 500-kV portions of the line, and a 100-foot-wide right-of-way for the 138-kV portions of the line (these same widths would be maintained during operation). These widths were established to ensure that sufficient clearance is maintained during high-wind events when conductors could be blown towards the right-of-way edge, and to allow sufficient room to perform transmission line maintenance. Because the majority of the B2H Project would pass through vegetation communities dominated by low-growing plants (e.g., agriculture, grasslands, and shrublands) the entire right-of-way would not be cleared of vegetation in most areas. With the exception of forested areas, construction clearing would be limited to the footprint of project facilities (e.g., tower bases, substations), access road footprints (i.e., 14-feet wide along straight segments and 16- to 20-feet wide at corners), areas directly adjacent to project facilities (i.e., about a 25-foot perimeter around tower bases), and extra work spaces required for construction (e.g., staging areas, fly yards, pulling/tensioning sites).

Although maintenance of tall vegetation is proposed for the permanent right-of-way, for the most part the permanent right-of-way would not be maintained, as the majority of the B2H Project crosses through low lying vegetation (see design features listed below).

Fugitive dust during construction would be considered an indirect effect to vegetation resources as habitat and plants would not be directly and immediately harmed by the introduction of dust to the area environment. Production of dust would be periodic during earth moving activities and occasional from use of construction access roads. These activities may create a nominal effect, but would be short-term during construction. Prolonged exposure of plant communities to fugitive dust may affect the growth and reproductive habits of vegetation by limiting plants' photosynthesis capabilities. Fugitive dust exposure resulting from the project would only occur during construction activities and use of access roads that have not yet revegetated. Operation of the transmission line will not create dust conditions. There for fugitive dust concerns would be short-term as they are limited to the construction period.

Grasslands

In general grassland vegetation communities regenerate more rapidly than other non-herbaceous communities such as shrublands and woodlands. Changes in landscape conditions, such as soil compaction, soil chemistry, soil moisture and drainage patterns, and topography, within grassland communities could render the habitat unsuitable for special status species with extremely specialized habitat requirements. Shading created by structures or solar radiation created by loss of shade due to vegetation removal would also alter suitable habitat, albeit with limited scope. Except for the footprints of permanent project facilities, the majority of impacts to grassland communities would be short-term in duration due to a relatively short recovery period of 1 to 3 years.

Shrublands

Impacts to shrublands would result from vegetation clearing and construction activity associated with construction of powerline structures, access roads, and ancillary facilities. Removal or damage to shrublands may require 30 to 100 years for areas to fully recover. Loss of vegetation would result in moderate to high, long-term impacts to shrubland communities, especially Dwarf and Tall Sagebrush Steppe subtypes that are provide habitat to a wide range of plant and wildlife species and slow to regenerate. Effects to Desert Shrubs and Tall Sagebrush Steppe in lower elevations would be high due to the decreased resiliency and long recovery times of these communities. Effects to higher elevation Dwarf and Tall Sagebrush Steppe and Mountain Shrub communities would be moderate due to increased resiliency, but would still be long-term.

Forests/Woodlands

In forested areas, vegetation that may interfere with the safe operation of equipment (taller shrubs and trees, for example) would be cleared during construction and maintained during operations. Vegetation would not be cleared in areas where the distance between the conductor and the top of the tallest mature tree is greater than 50 feet (e.g., in areas where the line spans a canyon or ravine). Because construction effects to vegetation communities would be limited to the right-of-way, as a result, periodic clearing is only expected to occur within forested portions of the route and only in areas where a 50-foot clearance is not possible without vegetation maintenance (e.g., areas where the B2H Project spans a canyon or ravine may not need to be cleared even if tall trees are present). Impacts to forests and woodlands would range from moderate to high, and considered long-term because these areas could take anywhere from 50 to many hundreds of years to reach preconstruction conditions (depending on the condition of the area prior to construction).

Wetlands, Riparian, and Surface Water

Impacts to wetlands and riparian areas would range from low to moderate, and short- to long-term depending on vegetation composition. Herbaceous wetlands would generally recover within 3 to 7 years. Impacts to wetlands and riparian areas would result from the loss of habitat for non-listed plant species and permanent loss of biologically important plant habitats. Due to the small amount of land occupied by wetlands and their disproportionate importance to wildlife, the federal government has adopted a no net-loss policy in order to preserve this important vegetation community. Therefore, any wetlands disturbed by the B2H Project would be reconstructed, rehabilitated, and/or otherwise recovered. Components of the Proposed Action and alternatives have been or would be sited away from wetlands to avoid any impacts during construction or operation of the project. Jurisdictional wetlands are discussed in more detail in Section 3.2.2 (Water Resources).

Bare Ground, Cliffs, and Talus

Arid sites with naturally sparse vegetation, as well as those with saline or alkaline soils, shallow soils, or areas that have a high erosion potential may be difficult to restore and could require special techniques or repeated revegetation efforts. The vegetation communities that re-establish after construction may differ from preconstruction conditions if soils are modified during construction due to compaction or by breaking up of hardpans. Depending on the specific edaphic and geomorphic properties of the affected area, impacts could range from low to high, and persist through the short- or long-term.

Agriculture

Agricultural areas typically have been profoundly altered from any natural state of vegetation. Impacts to these heavily modified areas would be low and short-term as agricultural use for row crops could be reinitiated immediately or within 1 to 3 years for damage to pastures and hayfields.

B2H Project construction and operations effects on agricultural operations are discussed in Section 3.2.6 Land Use, Agriculture, Recreation, and Transportation and will not be discussed in detail in the segment analyses.

Federally Listed and Candidate Plant Species

The construction and operation of the B2H Project could have direct and indirect impacts on federally listed plant species similar to those previously described for primary vegetation communities. If construction were allowed to occur in areas occupied by federally listed plant species, these plants could be crushed, buried, or grubbed, resulting in direct mortality. Pre-construction surveys would be conducted to identify species locations/presence. There may be some cases where micrositing would not be feasible and direct impacts could occur. For example, there may be cases where a species is so widespread and occurs in such a large area that it could not be entirely avoided. However, this would be an unusual case, as the one federally-listed species thought to be present in the analysis area has limited distribution. In addition, direct impacts could occur if the species is present within the analysis area, but only in a soil-stored seedbank with no above ground expression. In these instances, the plant may not be identified during surveys, and the soil-stored seed-bank could become disturbed. However, in areas where soil will need to be removed, the entire topsoil layer would be cleared and stored separately from subsoil layers. To limit the potential impact on soil-stored seed-banks, soils layers would be restored in their proper order.

Indirect impacts on federally listed plant species can still occur even if populations or individuals are entirely avoided. These can occur as a result of soil erosion altering habitats, soil disturbances creating opportunities for invasion by exotic plant species, access roads serving as vector for the spread of exotic plant species, alteration of hydrology/draining patterns and/or the alteration of local fire regimes due to Project construction and operation.

Special Status Plant Species

Impacts to special status plant species would be similar to those described for federally-listed plants regardless of status. It is likely that despite avoidance efforts, at least one special status species population will be impacted by the Proposed Action or alternatives. Direct impacts would result in the loss of a population and dependent on the species have an effect on the species as a whole.

Noxious Weeds

Vegetation removal and soil disturbance during construction could create optimal conditions for the establishment of noxious weeds. Vehicles and construction equipment can serve as vectors, thereby transporting plant species propagules from one location to another, which can result in the establishment of these species in previously "weed-free" areas or an increased distribution or abundance of existing noxious weed species populations. Activities such as the excavation and transportation of borrow materials and topsoil or reclamation may also contribute to the spread of noxious weeds. Disturbed areas may be seeded by airborne seeds from plants in adjacent habitats. After construction, noxious weed species can become established in disturbed and reclaimed areas, and those that are present in the construction areas may spread into adjoining habitats. As a result, noxious weed species can spread to areas outside the original project area.

The establishment of noxious weeds can affect the quality of habitat through competition with, and the eventual replacement of, desirable native species (Westbrook 1998). The replacement of native species can have various environmental effects, including changes in fire regime (e.g., increasing the frequency and severity of fires), changes in the nutrient regime of soils, increases in soil erosion, or reductions to the quality of wildlife habitats. Noxious weeds can negatively impact vegetation community structure by creating, changing the density of, or eliminating vegetation layers or canopy cover. In rangelands and agricultural areas, noxious weeds have the potential to reduce the quality, quantity, and value of forage or crops and can increase management procedures and costs. In general, grasslands, riparian areas, agricultural areas, open forests/woodlands, and habitats with large expanses of bare ground are more susceptible to invasion by noxious weeds than dense forests, and high montane areas are, as these typically have relatively closed canopies, extreme climates, or soil conditions tolerated by few noxious weeds.

Ultimately, IPC would be responsible for the control of noxious weeds that are spread or introduced as a result of the construction and operation of the B2H Project. IPC would not be responsible for any noxious weeds currently present within the analysis area; however, they would need to ensure that these current populations do not spread to new areas or become more prolific.

The risk of noxious weed spread/establishment during operations would be much lower than during construction due to the reduced level of disturbance expected during operations. However, some disturbance would occur during operations that could create opportunities for the spread and/or establishment of these species. Ongoing maintenance and prevention of invasive plant species spread/establishment is included in the B2H Project's operational design. The Framework Reclamation Plan, and the Framework Operations, Maintenance, and Emergency Response Plan (Appendices G and K of the Revised POD), would include measures that limit the spread and/or establishment of noxious weeds during operation and would become conditions of approval of the right-of-way.

First Foods and Ethnobotanical Resources

Impacts on first foods and ethnobotanical resources would range from low to moderate, and short- to long-term depending on source vegetation community composition. Grasslands and shrublands occur extensively throughout the project area. Effects to ethnobotanical resources in grasslands would be low and short-term as described for this community above. Effects to ethnobotanical resources in shrublands would range from moderate to high, and be long-term. Removal of forest and woodland communities would result in the loss of vegetation that regenerates slowly and may result in permanent loss of important habitat for first foods such as mushrooms and huckleberries. Effects to ethnobotanical resources in forests and woodlands would be moderate to high and long-term due to the long recovery period necessary in these communities. Several first foods and ethnobotanical resources are identified as occurring in wetland, riparian and surface water communities. Loss of riparian habitat may result in permanent loss of an important and limited habitat for first foods and ethnobotanical resources and effects would range from moderate to high, and be short- to long-term in duration. Effects to first foods and ethnobotanical resources are difficult to quantify without site-specific information on the species affected. Therefore, impacts to first foods and ethnobotanical resources are discussed in the context of effects to their source vegetation communities and will not be discussed specifically in the segment analyses.

Effects by Segment

The dominant vegetation communities crossed by the transmission line right-of-way for the Proposed Action and each alternative are detailed in the segment descriptions below. The types of potential effects on vegetation communities that could occur with implementation of the Proposed Action or alternatives and the degree to which these effects would be mitigated or avoided are described in the effects analysis. Criteria for assessing intensity of impacts are presented in Table 3-42.

Segment 1—Morrow-Umatilla

The analysis area of Segment 1 contains an imperiled native grassland vegetation community and three special status plant species. Effects to the vegetation community and one high priority special status plant species (*Laurent's milkvetch*) are discussed in greater detail below. The effects to vegetation communities would be low to moderate due to the low percentage of available community types impacted by the Proposed Action and alternatives. However, where impacts to rare plant associations or communities supporting high priority special status species occur the impacts would be high. The initial impacts from potential noxious weed infestation would be high, but are anticipated to be low following implementation of design features.

Vegetation Communities

Agricultural land is the primary land cover type potentially affected by the Proposed Action and alternatives in Segment 1 (Table 3-43). Shrubland and grassland vegetation communities could also be impacted to a lesser degree.

Table 3-43. Acreage of Primary Vegetation Community/Land Cover Types within the Right-of-Way of the Proposed Action and Alternatives

Segment	Proposed Action/ Alternatives	Total Right-of-Way (acres)	Vegetation Community/Land Cover (total acres and percent within right-of-way [2])						
			Grasslands	Shrublands	Forest/ Woodlands	Wetland, Riparian, Open Water	Bare Ground, Cliffs, Talus	Agriculture	Developed/ Disturbed
1—Morrow-Umatilla	Proposed Action	2,632	427 (16%)	810 (31%)	22 (1%)	5 (<1%)	<1 (<1%)	1,335 (51%)	35 (1%)
1—Morrow-Umatilla	Horn Butte Alterntive	2,437	401 (16%)	706 (29%)	22 (1%)	5 (<1%)	<1 (<1%)	1,279 (52%)	26 (1%)
1—Morrow-Umatilla	Longhorn Alternative	2,157	408 (19%)	620 (29%)	22 (1%)	13 (1%)	<1 (<1%)	1,047 (49%)	50 (2%)
1—Morrow-Umatilla	Longhorn Variation [1]	2,275	389 (17%)	823 (36%)	22 (1%)	7 (<1%)	<1 (<1%)	953 (42%)	84 (4%)
2—Blue Mountains	Proposed Action [1]	1,382	65 (5%)	413 (30%)	842 (61%)	43 (3%)	1 (<1%)	18 (1%)	6 (<1%)
2—Blue Mountains	Glass Hill Alternative	1,381	64 (5%)	436 (32%)	812 (59%)	50 (4%)	10 (1%)	18 (1%)	6 (<1%)
3—Baker Valley	Proposed Action	1,689	138 (8%)	1,517 (90%)	8 (<1%)	14 (1%)	14 (1%)	9 (1%)	3 (<1%)
3—Baker Valley	Flagstaff Alternative [1]	1,690	121 (7%)	1,463 (87%)	15 (1%)	22 (1%)	14 (1%)	74 (4%)	3 (<1%)
3—Baker Valley	Timber Canyon Alternative	2,149	162 (8%)	1,158 (54%)	727 (34%)	58 (3%)	10 (<1%)	53 (2%)	6 (<1%)
3—Baker Valley	Burnt River Mountain Alternative [1]	1,687	138 (8%)	1,469 (87%)	38 (2%)	18 (1%)	14 (1%)	14 (1%)	10 (1%)
4—Brogan Area	Proposed Action	1,486	588 (40%)	797 (54%)	2 (<1%)	22 (1%)	78 (5%)	15 (1%)	3 (<1%)
4—Brogan Area	Willow Creek Alternative	1,316	443 (34%)	723 (55%)	1 (<1%)	24 (2%)	70 (5%)	66 (5%)	8 (1%)
4—Brogan Area	Tub Mountain South Alternative [1]	1,492	634 (42%)	660 (44%)	1 (<1%)	22 (1%)	84 (6%)	101 (7%)	11 (1%)
5—Malheur	Proposed Action [1]	1,215	377 (31%)	598 (49%)	1 (<1%)	13 (1%)	222 (18%)	8 (1%)	4 (<1%)
5—Malheur	Double Mountain Alternative	1,215	344 (28%)	615 (51%)	1 (<1%)	11 (1%)	239 (20%)	8 (1%)	4 (<1%)
5—Malheur	Malheur A Alternative	1,296	322 (25%)	742 (57%)	1 (<1%)	11 (1%)	222 (17%)	4 (<1%)	2 (<1%)
5—Malheur	Malheur S Alternative	1,309	350 (27%)	696 (53%)	1 (<1%)	12 (1%)	253 (19%)	4 (<1%)	2 (<1%)
6—Treasure Valley	Proposed Action [1]	722	318 (44%)	349 (48%)	0	4 (1%)	30 (4%)	17 (1%)	5 (1%)

Table Notes: [1] Indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Right-of-way is defined a 250-foot corridor; 125 feet from either side of the route centerline.

Grasslands

Construction of the Proposed Action or alternatives would have low, short-term effect on grasslands within Segment 1 (Table 3-43). Native and non-native grasslands could be affected in relatively equal amounts (Table 3-44).

The removal of vegetation associated with construction of new roads in the right of way, towers, fly yards, and pads would result in the permanent loss of vegetation. Native grasslands in all Segment 1 analysis areas consist of the Columbia Basin Palouse Prairie ecological system, a critically imperiled native community. The initial direct and indirect effects to this ecological system through vegetation removal and potential introduction of noxious weeds to a native landscape would be long-term and high, potentially resulting in the permanent loss of a biologically important habitat type.

The Proposed Action would impact the most acreage of grasslands in comparison to the the alternatives (Table 3-44). The Longhorn Variation would impact the least amount of grassland acres and is the agency and environmentally preferred alternative. Nevertheless, impacts to grasslands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43).

Shrublands

Construction of the Proposed Action or alternatives would have low to moderate, long-term effect on shrublands within Segment 1 (Table 3-43). Although the Longhorn Variation would impact the most shrubland acreage (Table 3-45), it is the agency and environmentally preferred alternative. Tall Sagebrush Steppe communities would be affected most, with the remaining shrubland subtypes affected similarly in much lower amounts (Table 3-45). The Longhorn Variation would affect nearly 25 percent more shrublands than the Longhorn Alternative which affects the least amount of shrublands in Segment 1. Impacts to shrublands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43).

Forests/Woodlands

Forest/Woodlands are a relatively minor component within the Segment 1 right-of-way areas, and construction of the Proposed Action or alternatives would have low, but long-term effects within Segment 1 (Table 3-43). Twenty-two acres of Mixed Conifer Forest would be affected regardless of the route or alternative selected (Table 3-46). Impacts to forests/woodlands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43).

Bare Ground, Cliffs, and Talus

Bare ground, cliffs and talus occur in negligible amounts (<1 acre) in the Segment 1 right-of-ways, and would be affected the same regardless of the route or alternative selected.

Federally Listed and Candidate Species

There are no federally listed or candidate species that occur within Segment 1.

Table 3-44. Acreage of Grassland Vegetation Community and Subtypes within the Right-of-Ways of the Proposed Action and Alternatives

Segment	Proposed Action/Alternative	Total Grassland Acres within Right-of-Way [2]	Total Grassland Subtype Acres within Right-of-Way [2]	
			Native Grasslands	Non-Native Grasslands
1—Morrow-Umatilla	Proposed Action	427	227	200
1—Morrow-Umatilla	Horn Butte Alternative	401	221	179
1—Morrow-Umatilla	Longhorn Alternative	408	219	189
1—Morrow-Umatilla	Longhorn Variation [1]	389	215	174
2—Blue Mountains	Proposed Action [1]	65	63	2
2—Blue Mountains	Glass Hill Alternative	64	62	2
3—Baker Valley	Proposed Action	138	96	42
3—Baker Valley	Flagstaff Alternative [1]	121	77	44
3—Baker Valley	Timber Canyon Alternative	162	84	79
3—Baker Valley	Burnt River Mountain Alternative [1]	138	91	47
4—Brogan Area	Proposed Action	588	264	324
4—Brogan Area	Willow Creek Alternative	443	52	391
4—Brogan Area	Tub Mountain South Alternative [1]	634	60	575
5—Malheur	Proposed Action [1]	377	28	349
5—Malheur	Double Mountain Alternative	344	27	317
5—Malheur	Malheur A Alternative	322	61	261
5—Malheur	Malheur S Alternative	350	44	306
6—Treasure Valley	Proposed Action [1]	318	6	312

Table Notes: [1] Indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Right-of-way is defined as a 250-feet corridor; 125 feet from either side of the route centerline.

Special Status Species

The special status plant species that have suitable habitat in Segment 1 within the vicinity of the Proposed Action and alternatives include Laurent's milkvetch, Mingan moonwort, and Salt heliotrope. None of the species have documented occurrences within the right-of-way of the Proposed Action or alternatives.

Laurent's milk-vetch is presently documented from seven populations along the Proposed Action, the closest being 0.3 miles from the right-of-way in the upper Alkali Canyon watershed of western Umatilla County. There are no populations documented within the right-of-way of the Proposed Action or any of the alternatives. The dependency of Laurent's milkvetch on native grassland habitat leaves it vulnerable to impact from alterations to grassland communities that may include the introduction of noxious weeds. As discussed previously, there is very little difference in impacted native grassland communities between the Proposed Action and alternatives. The percentage of available habitat impacted is equal across all alternatives. However, the Proposed Action impacts the greatest acreage of this community type. The potential conversion of habitat for special status species through the introduction of noxious weeds would result in high, long-term impacts to special status species in Segment 1.

Noxious Weeds

Buffalobur, Canada thistle, diffuse knapweed, klamathweed, purple loosestrife, spotted knapweed, tansy ragwort, and yellow starthistle have all been reported in Segment 1. Weedmapper (2012) documents each of these species along the Proposed Action with diffuse knapweed, purple loosestrife, spotted knapweed, and yellow starthistle documented along the Longhorn Alternative. Ground disturbance in the vicinity of known weed infestations increases the likelihood of weed recruitment associated with the disturbance. Intensity of impacts to perennial vegetation and agricultural lands would be long-term and high.

Table 3-45. Acreage of Shrubland Vegetation Community and Subtypes within the Right-of-Ways of the Proposed Action and Alternatives

Segment	Proposed Action/ Alternative	Total Shrubland Acres within Right-of-Way [2]	Total Shrubland Subtype Acres within Right-of-Way [2]			
			Desert Shrub	Dwarf Sagebrush Steppe	Tall Sagebrush Steppe	Mountain Shrub
1—Morrow-Umatilla	Proposed Action	810	10	8	787	6
1—Morrow-Umatilla	Horn Butte Alternative	706	10	8	682	6
1—Morrow-Umatilla	Longhorn Alternative	620	9	8	597	6
1—Morrow-Umatilla	Longhorn Variation [1]	823	25	8	784	6
2—Blue Mountains	Proposed Action [1]	413	0	7	221	184
2—Blue Mountains	Glass Hill Alternative	436	<1	7	199	230
3—Baker Valley	Proposed Action	1517	<1	60	1347	109
3—Baker Valley	Flagstaff Alternative [1]	1463	<1	32	1314	116
3—Baker Valley	Timber Canyon Alternative	1158	<1	120	798	240
3—Baker Valley	Burnt River Mountain Alternative [1]	1469	0	82	1246	141
4—Brogan Area	Proposed Action	797	1	64	675	58
4—Brogan Area	Willow Creek Alternative	723	6	31	659	27
4—Brogan Area	Tub Mountain South Alternative [1]	660	11	52	564	33
5—Malheur	Proposed Action [1]	598	18	6	568	5
5—Malheur	Double Mountain Alternative	615	21	6	582	6
5—Malheur	Malheur A Alternative	742	23	4	715	<1
5—Malheur	Malheur S Alternative	696	27	3	666	<1
6—Treasure Valley	Proposed Action [1]	349	62	0	287	0

Table Notes: [1] Indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Right-of-way is defined as a 250-feet corridor; 125 feet from either side of the route centerline.

Segment 2—Blue Mountains

The right-of-way areas of Segment 2 contain forest/woodlands communities that are slow to regenerate and provide high value special status species habitat. Effects to these vegetation communities and three high priority plant species (Howell's spectacular thelypody, Douglas' clover, and Oregon semaphore grass) are discussed in greater detail below. The effects to grassland and shrubland vegetation communities would be low to moderate. Effects to forest/woodland communities would be moderate to high. The effects to Howell's spectacular thelypody would be low, Douglas' clover would be high, and Oregon semaphore grass would be low. The initial impacts from potential noxious weed infestation would be high, but are anticipated to be low following implementation of design features.

Vegetation Communities

Forests/Woodlands and Shrublands are the primary land cover type potentially affected by the Proposed Action and Glass Hill Alternative in Segment 2 (Table 3-43). Grassland and Wetland, Riparian, and Surface Water vegetation communities could also be impacted to a lesser degree.

Grasslands

Construction of the Proposed Action or an alternative would have low, short-term effect on grasslands within Segment 2 (Table 3-43). Native grasslands would be affected most (Table 3-44). Native grasslands in Segment 2 consist primarily of the Columbia Plateau Steppe and Grassland ecological system, which is dominated by perennial bunchgrasses and forbs. The initial direct and indirect effects to this ecological system through vegetation removal and potential introduction of noxious weeds to a native landscape would be long term and high, potentially resulting in the permanent loss of a biologically important habitat type. Impacts to grasslands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43) and would be the same regardless of the selection of the Proposed Action or an alternative (Table 3-44).

Shrublands

Construction of the Proposed Action or alternatives would have low to moderate, long-term effect on shrublands within Segment 2 (Table 3-43). Impacts to shrublands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43). Although the Glass Hill Alternative would impact slightly more shrubland acreage, the Proposed Action would impact the more Tall Sagebrush Steppe while the Glass Hill Alternative would impact the more Mountain Shrubs (Table 3-45). Desert Shrub and Dwarf Sagebrush Steppe communities are limited within the right-of-way areas and impacts would be negligible to low.

Forests/Woodlands

Forest/Woodlands are the predominant vegetation community within the Segment 2 right-of-way areas (59-61 percent; Table 3-43). Construction of the Proposed Action or alternatives would affect vastly more Mixed Conifer Forests acres than Juniper and Mahogany Woodlands and Rocky Mountain Aspen combined (Table 3-46). Impacts to Rocky Mountain Aspen stands which provide important habitat for wildlife would be high and long-term and would be the same regardless of the Proposed Action or alternatives selected. The Proposed Action which is also the Agency and Environmentally Preferred Alternative in Segment 2 would impact 38 more acres of Mixed Conifer Forest, but 9 fewer acres of Juniper and Mahogany Woodlands (Table 3-46). Impacts to forests/woodlands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43). Impacts to forested communities would be moderate, creating a long-term loss of vegetation that is slow to regenerate.

Table 3-46. Acreage of Forest/Woodland Vegetation Community and Subtypes within the Right-of-Ways of the Proposed Action and Alternatives

Segment	Proposed Action/Alternative	Total Forest/Woodland Acres within Right-of-Way [2]	Total Forest/Woodland Subtype Acres within Right-of-Way [2]		
			Mixed Conifer Forests	Rocky Mountain Aspen	Juniper and Mahogany Woodland
1—Morrow-Umatilla	Proposed Action	22	22	0	0
1—Morrow-Umatilla	Horn Butte Alternative	22	22	0	0
1—Morrow-Umatilla	Longhorn Alternative	22	22	0	0
1—Morrow-Umatilla	Longhorn Variation [1]	22	22	0	0
2—Blue Mountains	Proposed Action [1]	842	784	19	39
2—Blue Mountains	Glass Hill Alternative	812	746	19	48
3—Baker Valley	Proposed Action	8	1	0	8
3—Baker Valley	Flagstaff Alternative [1]	15	1	<1	14
3—Baker Valley	Timber Canyon Alternative	727	671	23	33
3—Baker Valley	Burnt River Mountain Alternative [1]	38	<1	0	38
4—Brogan Area	Proposed Action	2	0	0	2
4—Brogan Area	Willow Creek Alternative	1	0	0	1
4—Brogan Area	Tub Mountain South Alternative [1]	1	0	0	1
5—Malheur	Proposed Action [1]	1	1	0	0
5—Malheur	Double Mountain Alternative	1	1	0	0
5—Malheur	Malheur A Alternative	1	1	0	0
5—Malheur	Malheur S Alternative	1	1	0	0
6—Treasure Valley	Proposed Action [1]	0	0	0	0

Table Notes: [1] indicates the Environmentally Preferred Alternative and Agency Preferred Alternative. [2] Right-of-way is defined as a 250 feet corridor; 125 feet from either side of the route centerline.

Wetlands, Riparian, and Surface Water

The Proposed Action effects fewer wetland, riparian, and surface water acreage than the Glass Hill Alternative in Segment 2 (Table 3-43). Impacts to wetlands, riparian, and surface water communities within the right-of-way are roughly proportionate to their availability in the analysis areas and would be moderate to high, and short- to long-term in duration depending on community composition (i.e., herbaceous versus woody) (Table 3-38 and Table 3-43).

Bare Ground, Cliffs, and Talus

Bare ground, cliffs and talus occur in negligible to small amounts (1 - 10 acres) in the Segment 2 rights-of-way (Table 3-43). The Glass Hill Alternative would affect more acres of this land cover type.

Federally Listed and Candidate Species

There are two populations of Howell's spectacular thelypody documented in the Proposed Action analysis area in Segment 2 (Table 3-47). Neither population is located within the area of disturbance and will not be directly affected by activities associated with construction, operation, or maintenance. Existing access roads to the Proposed Action may cross occupied habitat creating potential indirect impacts resulting from fugitive dust. These impacts would likely be temporary once construction access roads are reclaimed. Due to the lack of direct impact to known populations and lack of impact to suitable habitat the effects to Howell's spectacular thelypody resulting from the Proposed Action in Segment 2 would be low. There are no Howell's spectacular thelypody populations located in the analysis area for the Glass Hill Alternative.

Table 3-47. Populations of Federally Listed Species Occurring in the Segment 2 Analysis Area

Route	Analysis Area Total (acres)	Disturbed Area Total (acres)	Howell's Spectacular Thelypody		
			Analysis Area	Disturbed	% Directly Impacted
Proposed Action	29,006	1,381	2	0	0
Glass Hill Alternative	28,990	1,381	0	0	0

Special Status Species

Two high priority special status species, Douglas' clover and Oregon semaphore grass, have known occurrences within the analysis area for Segment 2 (Table 3-48).

Table 3-48. Populations of Special Status Species Occurring in the Segment 2 Analysis Area

Route	Analysis Area Total (acres)	Disturbed Area Total (acres)	Douglas' Clover			Oregon Semaphore Grass		
			Analysis Area	Disturbed	% Directly Impacted	Analysis Area	Disturbed	% Directly Impacted
Proposed Action	29,006	1,381	3	1	33	4	0	0
Glass Hill Alternative	28,990	1,381	2	0	0	0	0	0

Douglas' Clover

Habitat for this species occurs within grassland, shrubland, and various wetland vegetation types accounting for approximately 38-41 percent of the vegetation composition within the right-of-way area of the Proposed Action and Glass Hill Alternative. One of the three populations of Douglas' clover is located within the disturbed area for Segment 2, resulting in a potential 33 percent loss of population in this segment. Populations located within the area of disturbance may be impacted directly due to vegetation removal activities associated with construction activities. Permanent loss of habitat due to placement of structures such as pads, towers, and facilities or shading of habitat from installation of these structures would directly affect individual plants and alter remaining habitat rendering it unsuitable to sustain a population. Noxious weed infestation due to ground disturbance and potential introduction from construction equipment or other sources would permanently degrade suitable habitat. A loss of one out of three populations associated with the Proposed Action would result in a permanent high effect to the species. There are two populations of Douglas' clover documented within the analysis area of the Glass Hill Alternative. The effect to Douglas' clover associated with the Glass Hill Alternative would be low.

Oregon Semaphore Grass

This species habitat occurs within grassland and various wetland vegetation types accounting for approximately 8-9 percent of the vegetation composition within the Proposed Action and Glass Hill Alternative right-of-way areas. Of the four populations known to occur within the analysis area for the Proposed Action there are none documented within the area of disturbance. There are no documented populations of Oregon semaphore grass within the analysis area for the Glass Hill Alternative. The effect to Oregon semaphore grass would be low.

Noxious Weeds

Black henbane, Canada thistle, dalmation toadflax, diffuse knapweed, Klamathweed, leafy spurge, purple loosestrife, spotted knapweed, tansy ragwort, and yellow starthistle have all been reported as occurring in Segment 2 within proximity to the Proposed Action and Glass Hill Alternative (BLM 2005, BLM 2012). Ground disturbance in the vicinity of known weed infestations increases the likelihood of weed recruitment associated with the disturbance. Intensity of impacts to perennial vegetation and agricultural lands would be long term and high. Implementation of design features would reduce the likelihood of noxious weed infestation and reduce the intensity of impacts to low.

Segment 3—Baker Valley

The analysis area of Segment 3 contains forest/woodlands and shrublands communities that are slow to regenerate and provide high value special status species habitat. Effects to these vegetation communities and three high priority plant species (Howell's spectacular thelypody, Snake River goldenweed, and Malheur prince's plume) are discussed in greater detail below. The effects to grassland and shrubland vegetation communities would be low to moderate depending on the dominant species affected. Effects to forest/woodland communities would be moderate. The effects to Howell's spectacular thelypody, Snake River goldenweed, and Malheur prince's plume would be low. The initial impacts from potential noxious weed infestation would be high, but are anticipated to be low following implementation of design features.

Vegetation Communities

The primary vegetation communities potentially affected by the Proposed Action and alternatives in Segment 3 of the B2H Project are dominated by shrublands (Table 3-43). Grasslands are also extensive and large acreages of forest/woodlands would be effected along the Timber Canyon Alternative.

Grasslands

Construction of the Proposed Action or alternatives would have low, short-term effect on grasslands within Segment 3 (Table 3-43). More acres of native grasslands would be affected than non-native grasslands (Table 3-44). Impacts to grasslands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43). The Timber Canyon Alternative would affect the most acres of grasslands in general; the Proposed Action would affect the most acres of native grasslands (Table 3-44).

Shrublands

Construction of the Proposed Action or alternatives would have low to moderate, long-term effect on shrublands within Segment 3. The Proposed Action would impact more shrubland acreage than the Burnt River Mountain, Flagstaff, and Timber Canyon Alternatives following in order of greatest to least (Table 3-43). Impacts to shrublands within the right-of-way are slightly higher than their availability in the analysis areas (Table 3-38 and Table 3-43). Although the Proposed Action and alternatives would effect more Tall Sagebrush Steppe acres than the other subtypes, more acres of Mountain Shrub and Dwarf Sagebrush Steppe communities would be impacted by the Timber Mountain Alternative (Table 3-45). Desert Shrub communities are extremely limited within the right-of-way areas and impacts would be negligible.

Forests/Woodlands

Forest/Woodlands are a relatively limited vegetation community within the Segment 3, with the exception of the Timber Canyon Alternative right-of-way area (Table 3-43). Construction of the Timber Canyon Alternative would affect vastly more Mixed Conifer Forests acres than Juniper and Mahogany Woodlands and Rocky Mountain Aspen combined (Table 3-46). Although some Juniper and Mahogany Woodland acres would be effected by the Proposed Action, the Flagstaff, and Burnt River Mountain Alternatives, impacts to Mixed Conifer Forest acreage would be negligible. In general, impacts to Rocky Mountain Aspen stands would occur on the Timber Canyon Alternative (Table 3-46). The Proposed Action would have the least amount of acres of impacts to forests/woodlands, while the Burnt River Mountain Alternative, which is the Agency and Environmentally Preferred Alternative, would have the most acres of impact to Juniper and Mahogany Woodlands (Table 3-46). Impacts to forests/woodlands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43). Direct effects to forest/woodlands would be permanent and moderate regardless of alternative. However, the Timber Canyon Alternative would be drastically higher in terms of area impacted.

Wetlands, Riparian, and Surface Water

The Timber Canyon Alternative impacts the largest acreage of wetlands, riparian and surface water communities (Table 3-43). However, impacts to wetlands, riparian, and surface water within the right-of-way are roughly proportionate to their availability in the analysis areas and would be moderate to high, and short- to long-term in duration depending on community composition (i.e., herbaceous versus woody) (Table 3-38 and Table 3-43). The Proposed Action and the Agency and Environmentally Preferred Alternative (Burnt River Mountain Alternative) would affect the same amount of acres of wetlands, riparian, and surface water.

Bare Ground, Cliffs, and Talus

Similar to the previous segments, bare ground, cliffs and talus occur in small amounts (10 - 14 acres) in the Segment 3 right-of-ways (Table 3-43). The Timber Canyon Alternative would affect the least amount of acres of this land cover type.

Federally Listed and Candidate Species

Documented populations in the analysis area and area of disturbance associated with the Proposed Action and alternatives are shown in Table 3-49. There are no populations located within the disturbance area of the Proposed Action, Timber Canyon, or Flagstaff Alternatives and no populations within the area of analysis for the Burnt River Alternative in Segment 3. Less than 5 percent of the available wetland vegetation type that supports Howell's spectacular thelypody would be impacted in this segment. Impacts to this species would be short-term and low associated with potential indirect effects resulting from fugitive dust created by use of existing access roads in the vicinity of thelypody habitat during construction activities.

Table 3-49. Federally Listed Species Occurrences within the Analysis Area for Segment 3

Route	Analysis Area Total (acres)	Disturbed Area Total (acres)	Howell's Spectacular Thelypody Populations		
			Total No. in Analysis Area	Total No. Disturbed	% Directly Impacted in Analysis Area
Proposed Action	35,540	1,688	8	0	0
Timber Canyon Alternative	45,283	2,150	7	0	0
Burnt River Mountain Alternative	35,323	1,685	0	0	0
Flagstaff Alternative	35,584	1,703	8	0	0

Special Status Species

The high priority special status plant species that have suitable habitat in Segment 3 within the vicinity of the Proposed Action and alternatives include Snake River goldenweed and Malheur prince's plume. The number of populations of these species directly impacted by the Proposed Action and alternatives is provided in Table 3-50.

Table 3-50. Special Status Species Occurrences within the Analysis Area for Segment 3

Route	Analysis Area Total acres	Disturbed Area Total acres	Snake River Goldenweed			Malheur Prince's Plume		
			Analysis Area	Disturbed	% Directly Impacted	Analysis Area	Disturbed	Directly Impacted
Proposed Action	35,540	1,688	7	1	14	3	0	0
Timber Canyon Alternative	45,283	2,150	7	0	0	0	0	0
Burnt River Mountain Alternative	35,323	1,685	5	1	20	3	0	0
Flagstaff Alternative	35,584	1,703	0	0	0	0	0	0

Snake River Goldenweed

Construction of the Proposed Action would directly impact 14 percent of the populations of Snake River goldenweed known to occur within the analysis area and construction of the Burnt River Mountain Alternative would directly impact 20 percent of the analysis area populations. Neither the Timber Canyon nor the Flagstaff Alternative would directly impact Snake River goldenweed. Where populations are known to occur in the area of disturbance, the slow regeneration time associated with shrubland communities, loss of habitat for this species would likely result in an effect to populations that would result in species level impacts. Loss of habitat may cause a loss of individuals or populations. Direct loss of individuals from construction activities is possible on the Proposed Action and Burnt River Mountain Alternative. The effects associated with these alternatives would be long-term and high. The effects associated with the Timber Canyon Alternative would be low.

Malheur Prince's Plume

There would be no direct impacts to Malheur prince's plume populations resulting from construction of the Proposed Action or any alternatives. There are three populations of this species that occur within the analysis areas of the Proposed Action and the Burnt River Mountain Alternative; however there are no documented occurrences occurring within the disturbance areas. Approximately 3 percent of the available bare ground, cliffs, and talus vegetation/land cover type associated with each of the alternatives would be impacted by the alternatives. Effects to Malheur prince's plume would be low.

Noxious Weeds

Bull thistle, dalmation toadflax, diffuse knapweed, hoary cress, leafy spurge, musk thistle, myrtle spurge, puncturevine, purple loosestrife, rush skeletonweed, scotch thistle, and spotted knapweed have been reported in Segment 3 from the by Weedmapper (2012). Leafy spurge has been mapped in particularly high concentrations in Baker County. Ground disturbance in the vicinity of known weed infestations increases the likelihood of weed recruitment associated with the disturbance. Intensity of impacts to perennial vegetation would be long-term and high. Implementation of design features would reduce the impact intensity to low.

Segment 4—Brogan Area

Effects to these vegetation communities and three high priority plant species (Snake River goldenweed, Malheur prince's plume, and Janish's penstamon) are discussed in greater detail below. The effects to grassland, shrubland, and bare ground vegetation communities would be low to moderate, and short- to long-term. Effects to rare forest/woodland communities would be high. However, effects to general forest/woodland communities would be low. The effects to Snake River goldenweed would be moderate and Malheur prince's plume would be low. The initial impacts from potential noxious weed infestation would be high, but are anticipated to be low following implementation of design features.

Vegetation Communities

The primary vegetation communities potentially affected by the Proposed Action and alternatives in Segment 4 of the B2H Project are dominated by shrublands and grasslands (Table 3-43). Bare ground, cliffs, and talus are more extensive in Segment 4 than in previous segments.

Grasslands

Construction of the Proposed Action or alternatives would have low, short-term effect on grasslands within Segment 4 (Table 3-43). More acres of non-native grasslands would be affected than native grasslands (Table 3-44). Impacts to grasslands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43). The Tub Mountain South Alternative which is also the Agency and Environmentally Preferred Alternative would effect the most acres of grasslands, the majority of which are non-native grasslands. The Proposed Action would also affect a considerable amount of grasslands, and although non-native grasslands comprise the majority, a substantial amount of native grasslands would be affected (Table 3-44).

Shrublands

Construction of the Proposed Action or alternatives would have moderate, long-term effect on shrublands within Segment 4. The Proposed Action would impact more shrubland acreage than the Willow Creek and Tub Mountain South Alternatives following in order of greatest to least (Table 3-43). Impacts to shrublands within the right-of-way are slightly higher than their availability in the analysis areas (Table 3-38 and Table 3-43). Tall Sagebrush Steppe communities would be affected most, with the remaining shrubland subtypes affected similarly in much lower amounts (Table 3-45). Desert Shrub communities are limited within the right-of-way areas and impacts would be negligible.

Forests/Woodlands

Forest/Woodlands comprised of Juniper and Mahogany Woodlands occur in negligible amounts (1-2 acres) in the Segment 4 rights-of-way (Table 3-43and Table 3-46). Impacts would be low and long-term.

Wetlands, Riparian, and Surface Water

The Willow Creek Alternative impacts the largest acreage of wetlands, riparian and surface water communities (Table 3-43). However, impacts to wetlands, riparian, and surface water within the right-of-way are roughly proportionate to their availability in the analysis areas and would be moderate to high, and short- to long-term in duration depending on community composition (i.e., herbaceous versus woody) (Table 3-38 and Table 3-43). The Proposed Action and the Agency and Environmentally Preferred Alternative (Tub Mountain South Alternative) would affect the same amount of acres of wetlands, riparian, and surface water.

Bare Ground, Cliffs, and Talus

Bare ground, cliffs and talus occur in relatively greater quantities than in previous segments (70-84 acres) in the Segment 4 rights-of-way (Table 3-43). The Tub Mountain South Alternative would affect the most acres, while the Proposed Action and Willow Creek Alternative would affect slightly less (Table 3-43).

Federally Listed and Candidate Species

There are no federally listed species that occur within Segment 4.

Special Status Species

The high priority special status plant species that have suitable habitat in Segment 4 within the vicinity of the Proposed Action and alternatives include Snake River goldenweed, Malheur prince's plume, and Janish's penstemon. However, Janish's penstemon is not a listed species in the state of Oregon and thus is not further analyzed in this segment. The number of populations of these species directly impacted by the Proposed Action and alternatives is provided in Table 3-51.

Snake River Goldenweed

Construction of the Proposed Action would directly impact 12 percent of the populations of Snake River goldenweed within the analysis area in Segment 4. The Willow Creek and Tub Mountain South Alternatives would impact less than 1 percent of the populations in the analysis areas for those alternatives. There are no populations located within the disturbance area for the Proposed 138/69-kV Rebuild. Loss of habitat and potential the potential loss of 16 populations associated with the Proposed Action would be a long-term high effect to the species. The effects to Snake River goldenweed from construction of the any of the alternatives would potentially result in the loss of sensitive plants that would not affect the overall population viability of the species. The effects from each of these alternatives would be long-term and moderate.

Malheur Prince's Plume

There are no documented population occurrences within the area of disturbance for the Proposed Action or any alternatives in Segment 4. The Proposed Action 69/138-kV rebuild impacts less than 1 percent of bare ground, cliffs, and talus vegetation/land cover type and the Proposed Action, Willow Creek, and Tub Mountain South Alternatives impact 5 percent or less of the community type in the analysis areas. Potential impacts to bare ground habitat may include soil compaction or disturbance creating the potential for noxious weed encroachment. The effects to Malheur prince's plume resulting from construction of the Proposed Action or alternatives would be short-term and low.

Table 3-51. Special Status Species Occurrences within the Analysis Area for Segment 4

Route	Analysis Area Total (acres)	Disturbed Area Total (acres)	Snake River Goldenweed Populations			Malheur Prince's Plume Populations			Janish's Penstemon Populations		
			Total No. in Analysis Area	Total No. Disturbed	% Disturbance Directly Impacted	Total No. in Analysis Area	Total No. Disturbed	% Directly Impacted	Total No. in Analysis Area	Total No. Disturbed	% Directly Impacted
Proposed Action	31,342	1,486	137	16	12%	12		0	1	0	0
Proposed 138/69-kV Rebuild	3,535	63	46	0	0%	0		0	0	0	0
Willow Creek Alternative	27,745	1,315	128	1	<1%	12		0	0	0	0
Tub Mountain South Alternative	31,497	1,497	126	4	<1%	44		0	0	0	0

Noxious Weeds

Buffalobur, Canada thistle, dalmation toadflax, diffuse knapweed, hoary cress, jointed goatgrass, leafy spurge, morning glory, musk thistle, puncturvine, rush skeletonweed, Russian knapweed, have all been documented in proximity to the Proposed Action. High concentrations of leafy spurge have been documented along the Proposed Action in Malheur County. Morning glory has not been documented in Segments 1, 2, or 3. New infestations of morning glory in areas not previously documented would result in long-term and high impact to native vegetation communities. Ground disturbance in the vicinity of known weed infestations increases the likelihood of weed recruitment associated with the disturbance. Intensity of impacts to perennial vegetation and imperiled native communities would be long-term and high. Implementation of design features would reduce the impact intensity to low.

Segment 5—Malheur

Effects to these vegetation communities and four high priority plant species (Mulford's milkvetch, Cronquist's stickseed, smooth mentzelia, and sterile milkvetch) are discussed in greater detail below. The effects to grassland and shrubland vegetation communities would be low to moderate and short- to long-term. The effects to wetland, riparian, and surface water would be long-term and high. Mulford's milkvetch and sterile milkvetch would experience low effects while Conquist's stickseed would be high, and smooth mentzelia would be low. The initial impacts from potential noxious weed infestation would be high, but are anticipated to be low following implementation of design features.

Vegetation Communities

Shrublands and grasslands are the primary vegetation communities potentially affected by the Proposed Action and alternatives in Segment 5 (Table 3-43). Bare ground, cliffs, and talus also occur in large quantities.

Grasslands

Construction of the Proposed Action or alternatives would have low and short-term effect on grasslands within Segment 5 (Table 3-43). Vastly more acres of non-native grasslands would be affected than native grasslands (Table 3-44). Impacts to grasslands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43). The Proposed Action would affect the most acres of native grasslands (Table 3-44).The Proposed Action would impact the most acreage of grasslands in comparison to the other alternatives (Table 3-44).

Shrublands

Construction of the Proposed Action or alternatives would have moderate, long-term effect on shrublands within Segment 5 (Table 3-43). The Proposed Action would impact the least amount of shrubland acres and is the Agency and Environmentally Preferred Alternative. Tall Sagebrush Steppe communities would be affected most, with the remaining shrubland subtypes affected similarly in very small quantities (Table 3-45). Impacts to shrublands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43).

Forests/Woodlands

Forest/Woodlands comprised of Mixed Conifer Forest (Northern Rocky Mountain Ponderosa Pine Woodland and Savanna) occur in negligible amounts (1 acre) in the Segment 5 rights-of-way (Table 3-43 and Table 3-46). Impacts would be low and long-term.

Wetlands, Riparian, and Surface Water

The Proposed Action and alternatives generally impact similar amounts of wetlands, riparian and surface water communities within the Segment 5 rights-of-way (Table 3-43). Impacts to wetlands, riparian, and surface water within the right-of-way are roughly proportionate to their availability in the analysis areas and would be moderate to high, and short- to long-term in duration depending on community composition (i.e., herbaceous versus woody) (Table 3-38 and Table 3-43). The Proposed Action, which is also the Agency and Environmentally Preferred Alternative in Segment 5, would affect 1 to 2 acres of wetlands, riparian, and surface water more than the remaining alternatives. In general impacts to wetlands would likely be due to fill activities within the wetlands, creating a permanent and high effect to the vegetation type. Impacts to forested wetlands would result in loss of slow growing regenerate high value habitat and the effects would be long-term and high. Impacts to streams and rivers due to crossings are discussed in detail in 3.2.5 Fish Resources.

Bare Ground, Cliffs, and Talus

Bare ground, cliffs and talus occur in large quantities within the Segment 5 rights-of-way (Table 3-43). The majority of this land cover type in Segment 5 is comprised of rhyolite and basalt cliffs that would be avoided during construction of the B2H Project; therefore impacts would be negligible.

Federally Listed and Candidate Species

There are no federally listed species occurring in Segment 5.

Special Status Species

The special status plant species that have suitable habitat in Segment 5 within the vicinity of the Proposed Action and alternatives include Mulford's milkvetch, Cronquist's stickseed, smooth mentzelia, and sterile milkvetch. Cusick's pincushion is known to occur in Segment 5. However, it is not a listed species in the state of Oregon and will not be analyzed further in this segment. The number of populations of these species directly impacted by the Proposed Action and alternatives is provided in Table 3-52.

Mulford's Milkvetch

Populations of Mulford's milkvetch are located within the analysis areas for the Proposed Action and all alternatives (Table 3-52). The highest numbers of the species are found in the analysis areas for the Proposed Action and Double Mountain Alternative. There are no populations located within the areas of disturbance for Segment 5. This species occupies a very narrow habitat niche. While only 5 percent of the shrubland vegetation type will be impacted by the project regardless of alternative, the general classification of shrubland communities creates a probable over estimation of the amount of impacted

Mulford's milkvetch habitat present within the analysis areas of the Proposed Action and alternatives. It is difficult to estimate the percentage of Mulford's milkvetch habitat within the analysis areas using this level of analysis. Populations of this species within proximity to proposed or existing access roads would be indirectly affected by fugitive dust. The effect to Mulford's milkvetch would be short-term and low.

Cronquist's Stickseed

Populations of Cronquist's stickseed are documented within the analysis area and areas of disturbance for the Proposed Action and all alternatives in Segment 5. The Malheur S and Malheur A Alternatives have the lowest number of populations within the analysis areas. However, these alternatives would directly impact the highest percentage of plant populations (Table 3-52) at 31 percent and 22 percent. As discussed previously, the distribution of this species is limited to a narrow radius surrounding the city of Vale in Malheur County. Direct impacts through habitat loss or loss of individuals to as many as one third of the plant populations located within the analysis area would result in a species level effect to this plant. Although the Double Mountain Alternative would impact the smallest percentage of this species Impacts associated with the Proposed Action and each of the alternatives would be permanent and have a high impact to the species with populations within the Malheur S Alternative being the most impacted followed by those in the Proposed Action, those in the Malheur A Alternative being the least impacted.

Smooth Mentzelia

Populations of smooth mentzelia are located within the analysis area for the Proposed Action, Malheur S, and Malheur A Alternatives (Table 3-52). The Malheur A Alternative would directly impact one population, or 6 percent of the populations located in the analysis area for the alternative. Smooth mentzelia occurs in a variety of habitats and populations are distributed well outside of the analysis areas for the project. Direct impacts to this population would not result in species level effects. Effects to smooth mentzelia resulting from the Proposed Action and Double Mountain and Malheur A Alternatives would be short-term and indirect. The effects to the species resulting from construction of the Malheur S Alternative would be long-term and moderate.

Sterile Milkvetch

Populations of sterile milkvetch are located within the analysis areas for the Malheur A and Malheur S Alternatives and no populations within the Proposed Action or Double Mountain Alternative (Table 3-52). There are no documented populations of the species within the area of disturbance on the Proposed Action or any alternative in Segment 5. The species utilizes a variety of habitats found in the bare ground, cliffs, and talus and shrubland community types. Effects to this species would be low.

Table 3-52. Special Status Species Occurrences within the Analysis Area in Segment 5

Route	Analysis Area Total (acres)	Disturbed Area Total (acres)	Mulford's Milkvetch Populations			Cronquist's Stickseed Populations			Smooth Mentzelia Populations			Sterile Milkvetch Populations		
			Total No. in Analysis Area	Total No. Disturbed	% Disturbance	Total No. in Analysis Area	Disturbed	% Disturbance	Total No. in Analysis Area	Total No. Disturbed	% Disturbance	Total No. in Analysis Area	Total No. Disturbed	% Disturbance
Proposed Action	25,607	1,214	68	0	0	115	13	11	16	0	0	0	0	0
Double Mountain Alternative	25,624	1,215	65	0	0	113	8	7	0	0	0	0	0	0
Malheur S Alternative	27,575	1,309	10	0	0	59	18	31	16	0	0	3	0	0
Malheur A Alternative	27,290	1,295	9	0	0	59	13	22	16	1	6	5	0	0

Noxious Weeds

Canada thistle, dalmation toadflax, halogeton, Mediterranean sage, musk thistle, puncturevine, purple loosestrife, rush skeletonweed, Russian knapweed, saltcedar, scotch thistle, spotted knapweed, and yellow starthisle have been reported occurring in proximity of the Proposed Action and alternatives in Segment 5. Halogeton is only documented in association with the analysis area within Segment 5. The spread of halogeton to other segments within the project area would result in new infestations in the project area. Similarly Russian knapweed is only documented in Segments 4 and 5, and saltcedar is only documented as occurring in Segments 5 and 6. New infestations of this species in areas not previously documented would result in a long-term and high impact to native vegetation communities. Ground disturbance in the vicinity of known weed infestations increases the likelihood of weed recruitment associated with the disturbance. Intensity of impacts to perennial vegetation and imperiled native communities would be long-term and high. Implementation of design features would reduce the impact intensity to low.

Segment 6—Treasure Valley

The analysis area of Segment 6 contains extensive shrubland communities that are slow to regenerate and provide high value special status species habitat. Effects to these vegetation types are discussed in greater detail below. There are no federally listed or special status species with known occurrences in the analysis area for this segment. There are no alternatives to the Proposed Action in Segment 6.

Vegetation Communities

Shrublands and grasslands are the primary vegetation communities potentially affected by the Proposed Action in Segment 6 (Table 3-43). Bare ground, cliffs, and talus and wetlands, riparian, and surface waters occur in much smaller quantities.

Grasslands

Construction of the Proposed Action would have low, short-term effect on grasslands within Segment 6 (Table 3-43). Non-native grasslands would comprise the vast majority of grasslands that would be affected in Segment 6; native grassland would also be affected but in much smaller quantities (Table 3-44). Impacts to grasslands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43).

Shrublands

Construction of the Proposed Action would have moderate, long-term effect on shrublands within Segment 6 (Table 3-43). Tall Sagebrush Steppe communities would be affected most, with smaller quantities of Desert Shrubs also affected (Table 3-45). Impacts to shrublands within the right-of-way are roughly proportionate to their availability in the analysis areas (Table 3-38 and Table 3-43).

Forests/Woodlands

Forest/Woodlands do not occur within the Segment 6 right-of-way (Table 3-43).

Wetlands, Riparian, and Surface Water

The Proposed Action would impact a very small amount of wetlands, riparian and surface water communities within the Segment 6 right-of-ways (4 acres; Table 3-43). Impacts to wetlands, riparian, and surface water within the right-of-way are roughly proportionate to their availability in the analysis areas and would be moderate to high, and short- to long-term in duration depending on community composition (i.e., herbaceous versus woody) (Table 3-38 and Table 3-43).

Bare Ground, Cliffs, and Talus

Bare ground, cliffs and talus occur in small amounts within the Segment 6 right-of-way (Table 3-43). Like Segment 5, the majority of this land cover type in Segment 6 is comprised of rhyolite and basalt cliffs that would be avoided during construction of the B2H Project; therefore impacts would be negligible.

Federally Listed and Candidate Species

There are no federally listed species known to occur within the analysis area in Segment 6.

Special Status Species

There are no high priority special status species known to occur within the analysis area in Segment 6.

Noxious Weeds

Morning glory, saltcedar, perennial pepperweed, purple loosestrife, Russian olive and scotch thistle have been documented have been reported in association with the Proposed Action in Segment 6. Russian olive has not been documented in Segments 1-5 Weedmapper (2012). New infestations of this species in areas not previously documented would result in a long-term high impact to native vegetation communities. Ground disturbance in the vicinity of known weed infestations increases the likelihood of weed recruitment associated with the disturbance. Intensity of impacts to perennial vegetation and imperiled native communities would be long-term and high. Implementation of design features would reduce the impact intensity to low.

DESIGN FEATURES

Appendix C to this Draft EIS lists the following design features to avoid and reduce adverse effects to vegetation communities, special status plant species and to reduce the risk of spread of noxious weeds. These design features would become conditions of approval of a right-of-way grant or special use authorization.

- REC-1—Qualified company personnel and contractors would facilitate avoidance of noxious weed infestations where possible and identify new infestations (see Appendix G of the Revised POD).
- REC-2—Preconstruction weed treatments would be limited to areas expected to have unavoidable ground-disturbing activities and have potential to spread weeds due to construction activities. Treatments would be conducted prior to the start of ground-disturbing activities. Preconstruction treatment may include (but is not limited to) using mechanical control and

herbicides. The Reclamation Plan would discuss control options. It would also include appropriate times for pre-construction noxious weed treatments based on phased in-services dates for line segments.

- REC-3—All herbicide applications would comply with label restrictions, federal, state and/or county regulation, and landowner agreements. No spraying would occur prior to notification and approval from the applicable land management agency or landowner. Private property would be sprayed only if written approval is obtained. State and federal herbicide recording requirements would be followed, including BLM and USFS recording requirements. The Reclamation Plan would contain a list of approved herbicides, target species and application times and rates.
- REC-6—Project vehicles and equipment would arrive at the job site clean of soil and herbaceous material. When project vehicles demobilize from the job sites where noxious weeds are present, they would use appropriate decontamination measures as defined in the Reclamation Plan.
- REC-7—Project-related storage and staging yards, fly yards, and other areas subject to regular long-term disturbance would be treated for noxious weeds when construction activity levels allow.
- REC-10—Straw, hay, mulch, gravel, seed and other imported materials must be certified weed-free. If certified weed-free materials are not available then alternative materials would be used with agency approval.
- REC-14—seeding/hydro mulching (or a combination of methods). Seeding methods would be chosen based on the type of seed, disturbance level, soil type, terrain, and precipitation levels for the area to be reclaimed. Seed mixtures and seeding methods would be reviewed and approved by the land management agency or private land owner. A reclamation and revegetation plan identifying reclamation stipulations would be developed and incorporated in the Revised POD.
- REC-16—In construction areas where recontouring is not required, vegetation would be left in place wherever possible, and original contour would be maintained to avoid excessive root damage and allow for resprouting. Vegetation not consistent with minimum clearance distances between trees and transmission line must be maintained for line safety and reliability (Required by North American Electric Reliability Corporation's Transmission Vegetation Management Program).
- OM-6—Before beginning an O&M project on federal or state land, IPC or its contractors shall comply with all appropriate Reclamation EPMs as appropriate to prevent the spread of noxious weeds.
- OM-7—To help limit the spread and establishment of noxious-weed species in disturbed areas, desired vegetation needs to be established promptly after disturbance. IPC would rehabilitate significantly disturbed areas as soon as possible after ground-disturbing O&M activities and during the optimal period. IPC would not reseed areas within a 25 foot radius around structures to minimize potential damage from wildland fires. IPC would treat and reseed disturbed areas in accordance with the approved reclamation plan (Appendix G of the Revised POD).
- OM-8—If noxious-weed species occur within IPC’s right-of-way as a result of IPC activities, IPC would coordinate treatment with the BLM, USFS, or other land owner as applicable. Treatments

would be in compliance with BLM and USFS land use plans and guidance. When determining whether treatment is necessary and whether it would produce the desired results, IPC would consider surrounding site conditions and whether weed-control activities would be conducted by other parties. IPC is only responsible for controlling noxious weeds to pre-disturbance levels.

- OM-11—Herbaceous plants and low-growing shrubs would be left in place if they do not interfere with the safe O&M of Project lines and equipment.
- OM-14—Sensitive plant or wildlife populations that occur within or adjacent to the right-of-way and work areas would be marked on the ground, where practical, to ensure they are avoided. If species are discovered during work, IPC would establish a spatial buffer zone and immediately contact the appropriate land-managing agency. Unless IPC is informed otherwise, work outside the buffer area would continue. If IPC needs to work within the buffer area, it would work with the appropriate land-managing agency to develop a mutually acceptable solution that allows the work to be completed within the scheduled outage window and/or in a timely manner. After the project is complete or no longer poses a threat to the plant populations, any marking would be promptly removed to protect the site’s significance and location from unwanted attention.
- OM-15—If any sensitive plants or wildlife species require relocation, permission would be obtained from the appropriate land management agency and others as required.
- OM-19—Reseed significantly disturbed areas with a non-invasive seed mix approved by the land-managing agency or property owner.

In addition to the design features, following construction, all areas not occupied by Project facilities or not needed for normal transmission line maintenance would be graded to restore the area to preconstruction contours and revegetated in accordance with applicable landowner/land-management requirements. The length of time required for successful revegetation would depend, in part, on the time required for plants to establish and grow to their preconstruction conditions.

Revegetation efforts would be conducted in compliance with the Framework Reclamation Plan (Appendix G to the Revised POD), which would include site-specific construction plans, BMPs, reclamation, and revegetation measures for each land-management area crossed by the Project. This plan would also include success criteria for measuring revegetation efforts (e.g., percent native vegetation and canopy-closure metrics), a monitoring plan, and measures that would be taken if the success criteria are not meet within a certain time frame. Special attention would be given to the prevention of erosion and stabilization of soils following construction; restoring soils to preconstruction conditions (e.g., breaking up areas that become compacted and maintaining topsoil); managing invasive plant species; using native species for seed/planting mixes; and any agency specifications required on federal- and state-managed lands. The Framework Reclamation Plan would be developed in consultation with applicable agencies and finalized for inclusion as a condition of approval of the right-of-way.

Not all areas would be revegetated; in some areas revegetation would either be limited or prevented. To ensure adequate ground-to-conductor clearances, tall shrubs and trees would be removed from the right-of-way on a routine cyclical clearing schedule (i.e., every 3 to 6 years). In addition, hazard trees (i.e., trees that pose a risk of falling onto conductors, structures, or project personnel from outside of the right-of-way) would be removed as needed.

Routine clearing would be conducted via chainsaws or similar methods. Similar maintenance efforts will be conducted around substations. Permanent access roads would be maintained and repaired as needed; however, they would not be routinely graded. Any tall vegetation that encroaches/establishes on roads and may interfere with safe operation (e.g., tall shrubs and trees) would be removed during the routine clearing schedule; however, grasses would be allowed to establish within the road's footprint, and vehicles would be expected to drive over this vegetation.

IPC has prepared a Proposed Plant and Wildlife Conservation Plan for B2H Project construction as Appendix H to the Revised POD (IPC 2011). The plan outlines steps IPC took in its initial siting of the B2H Project to avoid sensitive plant species and habitats, and the future steps IPC would take to conduct field studies to locate sensitive species and habitats on the ground and refine the right-of-way alignment and project structure locations to avoid or reduce impacts on sensitive species. The provisions of the plan would become conditions of approval of the right-of-way and would apply to all lands within the B2H Project area.

IPC has also prepared a Framework Reclamation Plan as Appendix G to the Revised POD (IPC 2011) that requires pre-construction field surveys; reclamation requirements including topsoil management, seedbed preparation and seed mixes; and post-construction weed control and monitoring. The Reclamation Plan would be finalized and adopted as a condition of the right-of-way approval.

Appendix K to the Revised POD is the Framework Operations, Maintenance and Emergency Response Plan which addresses seasonal timing restrictions, vegetation management and noxious weed control measures. The requirements of Appendix K would become conditions of the right-of-way approval. IPC would control noxious weeds, as well as other non-designated invasive plant species when applicable, through the implementation of its Framework Reclamation Plan and the Plan for Operations, Maintenance and Emergency Response. Standard procedures that would be implemented to control noxious weeds during construction will include 1) confining vehicles, sanitary facilities, and work areas to locations specified within right-of-way agreements and 2) cleaning all ground-disturbing equipment that could serve as a path for a weed infestation before entering construction areas or prior to conducting operational activities. Cleaning stations would be located at an IPC operation center, commercial car wash, or similar facility. Vehicles that travel only on paved roads and do not engage in soil disturbances would not be cleaned prior to entering work sites.

RESIDUAL EFFECTS

VEGETATION COMMUNITIES

Sensitive vegetation, including riparian communities, would be avoided or spanned and vegetation clearing would be limited in riparian habitats to minimize adverse impacts. Application of these mitigation measures would allow sensitive vegetation to remain undisturbed by the B2H Project and available for use by wildlife. Avoiding or spanning these resources also would lower the risk of introduction of weeds and invasive species and would reduce overall habitat fragmentation associated with the project.

FEDERALLY LISTED, CANDIDATE SPECIES AND SPECIAL STATUS SPECIES

As discussed in effects common to all it is likely that effects to listed species will be consistent regardless of listing status. Pre-construction surveys for ESA Candidate species would be conducted along the selected alternative for the transmission line and associated facilities (Design Feature PRC-8). Appropriate action would be taken to avoid adverse impacts on ESA Candidate species and their habitats (e.g., marking avoidance locations on the ground) (Design Features OM-14, PRC-8). The placement of roads or towers may be altered, where practicable (Mitigation Measure PRC-8). Monitoring activities, implementation of Project speed limits, and other restrictions may be implemented (Design Feature PRC-8). If federally listed or ESA Candidate species are discovered during work, IPC would establish a spatial buffer zone and immediately contact the appropriate land-managing agency. Unless IPC is informed otherwise, work outside the buffer area would continue. If IPC needs to work within the buffer area, it would work with the appropriate land-managing agency to develop a mutually acceptable solution that allows the work to be completed within the scheduled outage window and/or in a timely manner. After the project is complete or no longer poses a threat to the plant populations, any marking would be promptly removed to protect the site's significance and location from unwanted attention (Design Feature OM-14).

Impacts to resources will be addressed by implementation of design features where applicable. These design features are meant to reduce project impacts to the lowest level possible. In some cases the implementation of design features may not significantly reduce the level of effect, resulting in residual impacts. The summary of residual impacts is provided in Table 3-53. Additional protection measures are outlined in the Framework Operations, Maintenance and Emergency Response Plan and the 2011 Revised POD.

3.2.3.7 MITIGATION PLANNING

According to the Draft Framework for Development of Compensatory Mitigation Plans in Appendix D, resources with a high residual impact would require compensatory mitigation. Mitigation may occur in the form of additional conservation actions that include acquisition and preservation of habitat/vegetation communities and restoration or enhancement of vegetation communities. All compensatory mitigation will follow the guidelines in the Draft and Final Framework for Development of Compensatory Mitigation Plans.

Table 3-53. Summary of Initial and Residual Impacts

Primary Vegetation Types	**Initial Impacts**	**Design Features Implemented**	**Residual Impact**
Grasslands • Imperiled grasslands	Low High	REC-16, OM-11, OM-19, OM-21, OM-22 OM-6, OM-11, OM-21, OM-22	Low Moderate
Shrublands	Moderate	REC-16, OM-11, OM-19, OM-21, OM-22	Low
Forest/Woodlands • Imperiled forest/woodlands	Moderate High	OM-21, OM-22 OM-21, OM-22	Low High
Wetlands, Riparian, and Surface Water	High	SW-1-SW5, OM-10	Moderate
Bare ground, cliffs, and talus	Low	REC-13, REC-12	Low
Agriculture [1]	N/A	—	N/A
Developed/Disturbed	Low	OM-19, OM-22	Low
Federally Listed Species			
Howell's spectacular thelypody	Low	REC-5, OM-14, OM-15	Low
Priority Special Status Species			
Laurent's milkvetch	Low	OM-14, OM-15	Low
Douglas' clover	High	OM-14, OM-15	Moderate
Oregon semaphore grass	Low	OM-14, OM-15	Low
Snake River goldenweed	Moderate	OM-14, OM-15	Low
Malheur prince's plume	Low	OM-14, OM-15	Low
Janish's penstemon [2]	N/A	—	N/A
Mulfords milkvetch	Low	OM-14, OM-15	Low
Cronquist's stickseed	High	OM-14, OM-15	Moderate
Smooth mentzelia	Moderate	OM-14, OM-15	Moderate
Sterile milkvetch	Low	OM-14, OM-15	Low
Noxious Weeds			
Noxious Weeds	High	REC-1, REC-2, REC-6, REC-7, REC-9, REC-16, OM-6, OM-7, OM-8	Low
First Foods/Ethnobotanical Resources			
First Foods/Ethnobotanical Resources	Low	REC-16, OM-11, OM-19, OM-21, OM-22	Low

Table Note: [1] Effects to agricultural resources are not analyzed in this section. [2] Janish's penstemon is not analyzed in detail as it only occurs in the analysis area of Segment 5 but is not a listed species in Oregon.

3.2.4 Wildlife Resources

3.2.4.1 Introduction

Wildlife resources include terrestrial animal species and the habitats they depend on to survive and reproduce. Wildlife habitats provide cover from weather and predators, food and water for nourishment, and space to obtain food, water, and to attract a mate. Although all wildlife species are important members of native communities and ecosystems, most are common and have wide distributions within the Project area, state, and region. Consequently, the relationship of most of these species to the Boarman to Hemingway (B2H) Project is not discussed here in the same depth as species upon which the decision making agencies place management emphasis. Species that warrant increased management attention that will be discussed in detail below include Endangered Species Act (ESA) candidate, proposed, threatened and endangered species, BLM and USFS special status species, migratory birds, raptors, USFS management indicator species (MIS), state of Oregon endangered, threatened, critical, and vulnerable species, and other species of socioeconomic importance (e.g., big game).

3.2.4.2 Regulatory Framework, Policy, and Management Guidance

Implementation of the Proposed Action would be consistent with statutes, regulations, plans, programs, and policies of federal agencies, state and local governments, and affiliated tribes.

Federal

Endangered Species Act

The federal ESA was enacted in 1973. This law established a regulatory system to protect species that are at risk of extinction. Species listed under the ESA are protected from any action that would constitute a “take,” which is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Under Section 7, the ESA requires that “each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical” (16 USC 35 1531–1544).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (Eagle Act) prohibits take, possession, selling, purchasing, bartering, or transportation of live or dead bald or golden eagles or any parts, nests, or eggs of these birds. Under the Eagle Act, “take” includes pursuing, shooting, poisoning, wounding, killing, capturing, molesting, and disturbing. The U.S. Fish and Wildlife Service (USFWS) has developed the *National Bald Eagle Management Guidelines*, which provide general recommendations for activities that occur near bald eagle roosts and nests. These guidelines are not law but are meant to help landowners and agencies avoid violating the Eagle Act and, in turn, prosecution. On September 11, 2009, the USFWS published new guidelines and regulations specifying the conditions under which incidental take permits could be authorized under the Eagle Act (74 Federal Register [FR] 46836).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 USC703-712, July 3, 1918, as amended 1936, 1960, 1969, 1974, 1978, 1986, and 1989) was enacted in 1918 in order to put an end to the commercial trade of migratory birds and their feathers. This act decrees that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected (USFWS 2002). Under this Act, it is unlawful to pursue, hunt, take, capture, kill, possess, sell, barter, purchase, deliver, transport, or received any migratory birds (including parts, nests, eggs or other product, manufactured or not).

Executive Order 13186—Responsibilities of Federal Agencies to Protect Migratory Birds

Executive Order 13186 (January 10, 2001; "Responsibilities of Federal Agencies to Protect Migratory Birds") 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. The Executive Order also requires federal agencies to ensure that environmental analyses of federal actions required by the National Environmental Policy Act (NEPA), or other established environmental review processes, evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. This includes developing and implementing a Memorandum of Understanding (MOU) with the USFWS promoting the conservation of migratory bird populations in order to guide conformance with the Migratory Bird Treaty Act.

BLM and USFWS Memorandum of Understanding

The BLM recently entered into a MOU with the USFWS dated April 12, 2010, to identify and implement strategies that promote conservation of migratory birds and to avoid or minimize adverse impacts on migratory birds. Under the MOU, the BLM, in coordination with the USFWS, is to develop conservation measures and ensure monitoring of conservation measures to minimize, reduce, or avoid unintentional take.

The purpose of the MOU is, "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 BLM and the USFWS and in coordination with state, tribal, and local governments." (BLM and USFWS 2010).

Among the BLM's responsibilities under the MOU are the following:

> "Address the conservation of migratory bird habitat and populations when developing, amending, or revising management plans for BLM lands, consistent with the Federal Land Policy and Management Act, Endangered Species Act, and other applicable law. When developing the list of species to be considered in the planning process, BLM will consult the

> current USFWS Species of Concern lists. Under the MOU, the BLM agrees to consult the current listing of USFWS Birds of Conservation Concern, 2008 (BCC)" (BLM and USFWS 2010) and "In coordination with the FWS, develop conservation measures and ensure monitoring of the effectiveness of conservation measures to minimize, reduce or avoid unintentional take. As needed, modify conservation measures to be more effective to reduce unintentional take, and, as practicable, to restore and enhance the habitat of migratory birds..." (BLM and USFWS 2010).

Instruction Memorandum 2008-050, Migratory Bird Treaty Act - Interim Management Guidance

Instruction Memorandum 2008-050 addresses BLM's implementation of the Migratory Bird Treaty Act. The BLM Washington Office is currently developing an Instruction Memorandum that provides further guidance on the implementation of the BLM and USFWS MOU.

USFS and USFWS Memorandum of Understanding

The purpose of this MOU is, "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 State, Tribal, and local governments." (USFS and USFWS 2008). The MOU referenced here (2008) expired on December 08, 2013. Both parties have agreed to extend the MOU as currently written for two years while the parties work together to evaluate the MOU to ensure that it is meeting the stated purpose, scope, and responsibilities identified in Executive Order 13186. If deemed necessary by this evaluation, the Parties will revise portions of the MOU.

Among the USFS's responsibilities under the MOU are the following:

> Address the conservation of migratory bird habitat and populations when developing, amending, or revising management plans for national forests and grasslands, consistent with NFMA [National Forest Management Act], ESA, and other authorities listed above. When developing the list of species to be considered in the planning process, consult the current FWS Birds of Conservation Concern, 2008 (BCC), State lists, and comprehensive planning efforts for migratory birds. Within the NEPA process, 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 and "Coordinate with appropriate FWS Ecological Services office when planning projects that are likely to have a negative effect on migratory bird populations. Cooperate in developing approaches to minimize negative impacts and maximize benefits to migratory birds" (USFS and USFWS 2008).

National Forest Management Act

The National Forest Management Act of 1976, as amended, and its implementing regulations under 36 CFR 219, consolidate and articulate USFS management responsibilities for lands and resources of the National Forest System. National Forest Management Act regulations require that "fish and wildlife habitat be managed to maintain viable populations of existing species in the planning area." In accordance with the National Forest Management Act each national forest and grassland is required to develop LRMPs and periodically revise them. The USFS has developed Land and Resource Management Plans (LRMPs) for national forests that specify regulations, goals and management objectives including temporal and spatial restrictions for activities within areas managed to protect certain species and land and aquatic values. To ensure that these viable populations are maintained, the Pacific Northwest Region of the USFS has identified management requirements for a number species within the region. These management indicator species are emphasized because their populations can be used as an indicator of the health of a specific type of habitat (USDA 1990). Restrictions on land use and recommendations outlined in these documents were used while planning the B2H Project, particularly in regard to biological resources. A summary of all federally imposed seasonal restrictions is available in the administrative record; the B2H Project would comply with all agency timing restrictions unless an exception is granted by the agencies.

Special Status Species

Special status species include the following; those species listed under the ESA as endangered, threatened, proposed, or candidate; BLM and USFS sensitive species and state listed threatened, endangered, or priority species. Due to their high priority status, ESA species will also be discussed and analyzed separately in this document. Both the USFS and the BLM have established lists of species they consider "at risk" on lands they manage (BLM and USFS 2011, BLM 2003). The regional forester's sensitive species list includes animal species for which population viability is a concern within lands managed by the USFS. BLM special status species, as per BLM Manual 6840, are managed under the Special Status Species Policy, whose purpose is to conserve listed species and their ecosystems and to ensure actions taken by the BLM are consistent with the conservation of special status species and do not contribute to the listing of any species under the ESA.

USFS Management Indicator Species

The USFS Manual (2620.5[1]) defines MIS as "…plant and animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (USFS 1991). Each National Forest designates its own list of MIS. The Wallowa-Whitman National Forest has five MIS or groups that could occur in the analysis area.

Wildlife Concerns for Tribes with Treaty Rights and Traditional Interests in the Analysis Area

As a majority of the project area is within lands ceded to the U.S. Government by the Treaty of 1855 with the Cayuse, Umatilla, and Walla-Walla tribes, the BLM and USFS—as managers of the federal lands within the Project area—have the legal responsibility to consult with the Confederate Tribes of the Umatilla Indian Reservation (CTUIR) and consider the conditions necessary to satisfy the rights reserved by the tribe as part of its Treaty. Exercise of treaty rights could include, but is not limited to, collection of plant resources and hunting of small and large game for economic, religious, and cultural use. Project impacts to wildlife have the potential to effect CTUIR's exercise of these treaty rights.

Although CTUIR is the only Native American tribe with ceded lands in the Project area, several other tribes maintain traditional interests in natural resources, including wildlife, within the B2H analysis area. As indicated in consultation with the BLM, the Shoshone Paiute Tribes maintain that they possess "aboriginal title" to lands within the project area. The Burns Paiute Tribe, the Nez Perce Tribe, the Confederated Tribes of the Colville Reservation and the Shoshone-Bannock Tribes of the Fort Hall Reservation consider portions of the project area to be part of their aboriginal territory, subsistence range, traditional use area, or zone of influence.

Over the past two centuries, tribal access to natural resources, including large and small game, has been curtailed by changes to land ownership patterns, commercial extraction of resources, land use, and land management practices. Nevertheless, tribes maintain an active interest in wildlife in the Project area. BLM is currently consulting with these tribes to better understand the nature and location of wildlife impact concerns for the B2H Project. Ethnographic studies are currently being conducted by the CTUIR and Shoshone Paiute Tribes and may reveal additional information regarding type and distribution of species of small and large game considered significant by the tribes.

STATE

Comprehensive Wildlife Conservation Strategies

The Idaho Fish and Game (IDFG) and Oregon Department of Fish and Wildlife (ODFW) have published comprehensive wildlife conservation strategies aimed at encouraging land management activities that conserve and enhance wildlife habitat (IDFG 2005; ODFW 2006). These state comprehensive conservation strategies were established to create a conservation plan to conserve the states' species of greatest conservation need and to provide a common framework that would enable conservation partners (federal, state, and private) to jointly implement a long-term approach for the benefit of those species. The conservation strategies (also known as conservation plans) are not regulatory documents, so they are not intended to be prescriptive, and the species identified are not equivalent to an official state listing as threatened, endangered, or fully protected. However, these conservation strategies do identify species of greatest conservation need, identify the key habitats for each species and the regions within the state where they can be found, recommend actions to improve their population status and habitat conditions, and describe an approach for long-term monitoring. In general, the species identified as species of greatest conservation need are those that have demonstrated a conservation need (due to population or habitat conditions) or where demographic data are lacking. Oregon's comprehensive wildlife conservation strategy lists 224 species of greatest conservation need, which include 166 vertebrates and 58 invertebrates (ODFW 2006). The Idaho comprehensive wildlife conservation strategy establishes 229 species of greatest conservation need, which include 126 vertebrate species and 103 invertebrates (IDFG 2005). The IDFG is in the process of drafting a new state wildlife action plan that will supersede the comprehensive wildlife conservation strategies and may be released to the public in 2015.

Oregon Endangered Species Act

Oregon enacted a state ESA (Oregon Revised Statutes [ORS] 496.171 to 496.192 and 498.026) in 1987. The goal of this state law is for conservation of threatened or endangered species through "the use of methods and procedures necessary to bring a species to the point at which [protective] measures are no longer necessary" (ORS 496.171[1]). Species on the Oregon state list include all native species listed under the federal ESA as of May 15, 1987, as well as any additional native species determined by the appropriate state agency to be in danger of extinction throughout a large portion of its range within Oregon. The Oregon ESA requires state agencies to develop programs to manage and protect endangered species and to follow guidelines for threatened species. Responsibility for these species falls to ODFW. Species can be Oregon state-listed as endangered or threatened, proposed as endangered or threatened, or a candidate for listing (Oregon Biodiversity Information Center [ORBIC] 2010). Oregon maintains a list of species protected under the Oregon ESA of 1987 (ORBIC 2010). ODFW also maintains a list of sensitive species, under which species can be designated as critical or vulnerable (ORBIC 2010). This list is used to determine species on which to focus management, research, and conservation activities. The jurisdiction of the Oregon endangered species list differs from the federal ESA in that it is limited to state-owned land, state-leased land, and land over which the state has a recorded easement. In addition, enforcement and management for the state law is limited to state agencies (e.g., the Oregon Department of Agriculture for listed plant species).

Oregon Habitat Mitigation Policy

The ODFW has developed a Fish and Wildlife Habitat Mitigation Policy (Oregon Administrative Rules [OAR] 635-415-000) that provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The policy establishes consistent goals and standards to mitigate the impacts of a project on fish and wildlife habitats. A project's potential impact on Fish and Wildlife Habitat Mitigation Policy category types (as defined under OAR 635-415-000) needs to be assessed as part of the project's Energy Facility Siting Council (EFSC) site certification. EFSC specifies the conditions of construction and operations required by the State of Oregon. If approved, a Site Certification Agreement is issued in lieu of any other individual Oregon state or local agency permits (this assessment would be restricted to the portion of the project that crosses Oregon, as a similar program has not been developed in Idaho). This type of analysis is not included in the NEPA process, and is instead disclosed in EFSC Exhibit P (Fish and Wildlife) as part of the site certification.

Greater Sage-Grouse Policy and Management Guidance

U.S. Fish and Wildlife Service 12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered

In 2010, the USFWS issued their *12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered*, which found that listing the Greater Sage-Grouse as threatened or endangered under the ESA is warranted, but precluded by higher priority listing actions (USFWS

2010a). USFWS found that “sagebrush habitats are becoming increasingly degraded and fragmented due to multiple threats” and identified the major threats to Greater Sage-Grouse habitat as “direct conversion, urbanization, infrastructure such as roads and powerlines built in support of several activities, wildfire and the change in wildfire frequency, incursion of invasive plants, grazing, and nonrenewable and renewable energy development.” Based on a settlement agreement, USFWS is expected to make a final determination in 2015.

Greater Sage-Grouse Range-Wide Mitigation Framework” (Version 1.0 – September 3, 2014)

In September 2014, USFWS issued their Greater Sage-Grouse Range-Wide Mitigation Framework. The first part of this document provides general goals and regulatory considerations for any mitigation program within the context of the mitigation hierarchy. The second part provides overarching mitigation principles, standards, and recommendations for the development of mitigation processes and programs. The purpose of this document is to communicate some of the factors USFWS is likely to consider in evaluating the efficacy of mitigation practices and programs in reducing threats to Greater Sage-Grouse. The recommendations provided in this framework are consistent with the information and conservation objectives provided in the 2013 Conservation Objectives Team Report (COT Report) for Greater Sage-Grouse.

Oregon Department of Fish and Wildlife Management Plans

The ODFW has developed a conservation plan for the protection of Greater Sage-Grouse and their habitat within Oregon (Hagen 2011). The plan was adopted by the ODFW Commission in April 2011 and is intended to guide public land-management agencies and other land managers. The conservation plan uses a core-area landscape approach, as developed by Doherty et al. (2010), to protect Greater Sage-Grouse habitats. This landscape approach prioritizes habitats based on measures that assess Greater Sage-Grouse population and habitat relative abundance, and provides protection for a minimum of 75 percent of the population. This landscape approach establishes core areas and low-density areas based on metrics that assess Greater Sage-Grouse populations and habitat abundance. Core areas are established to protect the most important breeding areas, and this is determined from spring lek counts of males, while low-density habitat is delineated in additional areas that provide breeding, summer, and migratory habitats for greater sage-grouse. According to the conservation plan, the goal of core areas is to “assist in identifying the most productive habitat areas for Greater Sage-Grouse and those areas that should be protected from habitat loss and fragmentation” (Hagen 2011).

Because core areas are established around high densities of Greater Sage-Grouse, they protect about 90 percent of the population while only encompassing about 38 percent of the species’ range within Oregon. The ODFW’s Greater Sage-Grouse conservation plan is closely tiered to its *Habitat Mitigation Policy* (OAR 635-415-0025); core areas are classified as Category 1 habitats, while low-density areas are classified as Category 2 habitats. In their Mitigation framework (ODFW 2012), ODFW makes the following recommendations that relate to this project:

- Project sites should be selected to avoid core areas "because these habitats are considered essential and irreplaceable as defined in the Mitigation Policy"
- For Greater Sage-Grouse habitats impacted in low density areas, "mitigation sites will be prioritized and selected based on the following criteria (in order of preference):
  1 Core Areas that occur within a Conservation Opportunity Area (COA) or other landscapes with on-going Greater Sage-Grouse conservation actions;
  2 Core Areas that occur outside of a COA;
  3 Low Density Areas that occur within a COA or other landscapes with on-going Greater Sage-Grouse conservation actions;
  4 Low Density Areas that could occur outside of a COA."
- For transmission lines, "Habitats that are directly impacted or indirectly affected (i.e., changes in habitat use) by transmission lines to the project area should be mitigated." The Mitigation Framework states, "at a minimum, a disturbance band of 0.6 miles on either side of the line should be used to calculate area of impact."
- For access roads in Greater Sage-Grouse habitat the Mitigation Framework states, "Habitats should be mitigated that are directly impacted or indirectly affected (i.e., changes in habitat use) by access roads to a project area." The recommended width of the disturbance band to be applied to each side of an access road depends on traffic volume, as follows:
  - 0.20 mile for low-traffic-volume access roads (i.e., 0–2 vehicles/24 hours)
  - 0.50 mile for moderate-traffic-volume access roads (i.e., 3–8 vehicles/24 hours)
  - 1.00 mile for high-traffic-volume access roads (i.e., >8 vehicles/24 hours)
- To calculate the amount of habitat to be mitigated due to impacts from transmission lines and access roads, ODFW uses a habitat disturbance weighting. This takes into account the diminishing effect of distance from the transmission lines and roads.

ODFW classifies the status of Greater Sage-Grouse leks for management purposes, using the following definitions for documenting lek status in Oregon:

- Occupied lek: A regularly visited lek that has had at least one male counted in the last 7 years.
- Unoccupied lek: A lek that has been counted annually and has had zero birds for 8 or more consecutive years.
- Unknown lek: Any lek where the status has not been documented during the course of a breeding season. New leks found during aerial surveys in the current year receive an annual status of unknown unless they are confirmed on the ground or observed more than one time by air.

Management of Greater Sage-Grouse in Idaho

In the State of Idaho, management direction for Greater Sage-Grouse falls under the *Conservation Plan for the Greater Sage-grouse in Idaho* (Idaho Sage-grouse Advisory Committee 2006). The conservation plan includes background information on Greater Sage-Grouse, a summary of the species' status in

Idaho, a discussion of threats, various types of conservation measures, and evaluation guidelines and recommendations for research and monitoring. This plan refers to local working group plans for more specific direction, which in the vicinity of the Project area includes the Owyhee County Sage-grouse Management Plan. "The purpose of the Owyhee County Sage-grouse Management Plan is to use local input and knowledge to develop a long-term collaborative management plan providing a framework for Sage-grouse management in conjunction with federal, state, and Owyhee county land management plans and actions in Owyhee County. This long-term management plan will provide guidance to resource and land management agencies as well as Owyhee County in dealing with issues that directly or indirectly affect the Goal of the local working group."

IDFG classifies the status of Greater Sage-Grouse leks for management purposes using the following definitions for lek status in Idaho:

- Occupied lek: A lek that has been active (i.e., at least two displaying males observed) during at least one breeding season within the prior 5 years.
- Unoccupied lek: A lek that has not been active during a period of 5 consecutive years.
- Undetermined lek: Any lek that has not been documented as active in the last 5 years but for which survey information is insufficient to designate the lek as unoccupied. For example, if a lek is discovered the first time during an aerial survey but is not confirmed on the ground that year or revisited in subsequent years, the location is given an undetermined status.

BLM Management Policy for Greater Sage-Grouse

The BLM Washington Office developed Instruction Memorandum No. 2012-043 (IM 2012-043) *Greater Sage-Grouse Interim Management Policies and Procedures*, "…provides interim conservation policies and procedures to the Bureau of Land Management (BLM) field officials to be applied to ongoing and proposed authorizations and activities that affect the Greater Sage-Grouse (*Centrocercus urophasianus*) and its habitat. This direction ensures that interim conservation policies and procedures are implemented when field offices authorize or carry out activities on public land while the BLM develops and decides how to best incorporate long-term conservation measures for Greater Sage-Grouse into applicable LUPs (IM 2012-044). This direction promotes sustainable Greater Sage-Grouse populations and conservation of habitat while not closing any future options before the planning process can be completed." The primary objectives of IM 2012-043 are:

- Protection of unfragmented habitats;
- Minimization of habitat loss and fragmentation; and
- Management of habitats to maintain, enhance, or restore conditions that meet Greater Sage-Grouse life history needs.

IM 2012-043 provides guidance for Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH). PPH includes areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been identified in Idaho and Oregon by the BLM in coordination with ODFW and IDFG. In Oregon, ODFW had designated Greater Sage-Grouse core areas, and BLM used these core areas to map PPH (i.e., BLM's PPH is identical to ODFW's core areas), while BLM based the mapping of PGH on ODFW's low-density areas but also included occupied habitat as mapped by the BLM (Durtsche et al. 2010: A GIS-Based Habitat Model for the Greater Sage-Grouse in the Western United States).In Idaho, PPH and PGH were identified based on a model incorporating Greater Sage-Grouse breeding bird density and lek connectivity models, informed with additional ancillary broad scale habitat data, seasonal habitat maps, connectivity information, expert opinion, population persistence model, local priority areas and agriculture and conifer filters (Makela and Major 2012).

IM 2012-043 identifies policies and procedures designed to minimize habitat loss in PPH and PGH, will advance BLM's objectives to maintain or restore habitat to desired conditions by ensuring field offices analyze and document impacts to PPH and PGH, and coordinate with states and the USFWS when issuing decisions described in IM 2012-043. The goal for PPH, as identified in IM 2012-043, is cumulatively maintaining or enhancing Greater Sage-Grouse habitat, while reducing and mitigating adverse effects to the extent practical within PGH. IM 2012-043 provides the following direction for reviewing new or pending authorizations, including rights-of-way like the one requested for the proposed B2H Project, within PPH:

"For pending applications, assess the impact of the proposed right-of-way on Greater Sage-Grouse and its habitat, and implement the following:

- Ensure that reasonable alternatives for siting the right-of-way outside of the PPH or within a BLM designated utility corridor are considered and analyzed in the NEPA document.
- Identify technically feasible best management practices, conditions, etc. (e.g., siting, burying powerlines) that may be implemented in order to eliminate or minimize impacts.
- For rights-of-way where the total project disturbance from the right-of-way and any connected action is less than 1 linear mile, or 2 acres of disturbance, develop mitigation measures related to construction, maintenance, operation, and reclamation activities that, as determined in cooperation with the respective state wildlife agency, would cumulatively maintain or enhance Greater Sage-Grouse habitat."

For right-of-way applications where the total project disturbance from the right-of-way and any connected action is greater than 1 linear mile or 2 acres of disturbance, it is BLM policy that where a field office determines that it is appropriate to authorize a right-of-way, the following process must be followed:

- The BLM will document the reasons for its determination and require the right-of-way holder to implement measures to minimize impacts to Greater Sage-Grouse habitat.
- In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would

avoid or minimize habitat and population-level effects (Refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.

- Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed right-of-way and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed right-of-way decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and USFWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed right-of-way, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed right-of-way, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
- Field offices retain the discretion to reject or deny a right-of-way application, where appropriate, or defer making a final decision on an application until the completion of the LUP process described in the National Greater Sage Grouse Planning Strategy for the affected area.

WAFWA Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats (WAFWA Assessment)

The Western Association of Fish and Wildlife Agencies (WAFWA) entered into a contract with the USFWS in 2002 to produce a complete conservation assessment for Greater Sage-Grouse and its habitat. WAFWA chose to produce the assessment in two phases: phase I is an assessment of Greater Sage-Grouse populations and sagebrush habitats upon which they depend (Connelly et al. 2004 [WAFWA Assessment]). The WAFWA Assessment provides a thorough discussion of population status and trends, population ecology and characteristics, habitat characteristics, sagebrush ecosystem dynamics, sagebrush ecosystem status and trends, and other information concerning impacts to the Greater Sage-Grouse. The WAFWA Assessment demonstrated that approximately 99 percent of the current population of Greater Sage-Grouse is found in the United States, while the remaining 1 percent is located in Canada. Federal lands make up about 72 percent of the total range of the species making federal land management agencies primarily responsible for habitat management. However, privately owned lands provide critical seasonal habitats for many populations and their importance to conservation may greatly exceed their ownership percentage. Throughout their range, Greater Sage-Grouse populations are located on lands that overlap significant natural resources such as oil and gas resources, water resources, wind power sites, mineral deposits, agricultural, and recreational areas. Greater Sage-Grouse are also found in habitats that are at significant risk of change due to exotic weeds, fire, and conifer encroachment.

WAFWA Greater Sage-Grouse Comprehensive Conservation Strategy (WAFWA Strategy)

This document, identified as the WAFWA Strategy (Striver at al. 2006) is Phase II of the WAFWA Assessment discussed above. The WAFWA Strategy is a conservation strategy for Greater Sage-Grouse and sagebrush habitats, and is designed to augment and facilitate other conservation plans and strategies. This document references local, state, provincial, and agency conservation strategies and adds regional and range-wide strategies. Seven sub-strategies are outlined in the WAFWA Strategy, including: 1) conservation actions, 2) monitoring the effectiveness of conservation actions, 3) monitoring the implementation of conservation actions, 4) research and technology, 5) funding, 6) communications, and 7) adaptive management. In this WAFWA Strategy, seven Greater Sage-Grouse management zones are established based on populations within floristic provinces. The success of conservation actions will be judged on the basis of long-term population trends in each of the seven management zones. The overall goal of the WAFWA Strategy is to maintain and enhance populations and distribution of Greater Sage-Grouse by protecting and improving sagebrush habitats and ecosystems that sustain these populations. The overall objective of the WAFWA Strategy is to produce and maintain neutral or positive trends in populations and to maintain or increase the distribution of Greater Sage-Grouse in each management zone.

BLM National Technical Team Report

As part of its Greater Sage-Grouse conservation efforts, the BLM convened a National Technical Team. This team was composed of representatives from the BLM, the USFWS, the Natural Resources Conservation Service, the U.S. Geological Survey, and State Fish and Wildlife agencies. The team was responsible for ensuring that relevant science for Greater Sage-Grouse conservation was considered, reasonably interpreted and accurately presented with risks and uncertainties clearly delineated; providing conservation objectives in measurable terms to guide planning; and identifying science-based conservation measures. The National Technical Team prepared a report that fulfilled this responsibility by the end of 2011. The National Technical Team report provides management recommendations for the species across its entire range that could be implemented to address the threats. Because the range of the species is so large, and local ecological conditions vary, it is possible that local management decisions may differ from the specific standards in the report. If the local plan decisions vary from the National Technical Team report, the differences will be justified by scientific or local information. The report and its associated conservation measures are not intended to create a standard for Greater Sage-Grouse management.

USFWS Conservation Objectives Team Report

Working in advance of its 2015 listing decision, the USFWS decided to develop conservation objectives for the Greater Sage-Grouse that could help direct conservation actions for the species. The USFWS created a COT Report of state experts and USFWS representatives to accomplish this task. The team developed *Greater Sage-grouse Conservation Objectives: Final COT Report*, which identifies key areas for Greater Sage-Grouse, key threats in those areas, and the extent to which they need to be reduced in order for the species to be conserved and for the USFWS to determine that listing is not warranted (USFWS 2013). The COT Report establishes conservation objectives for the primary habitat threats identified in the March 2010 USFWS finding that listing of the Greater Sage-Grouse was warranted but precluded. Those objectives could be met through local planning efforts, BLM planning efforts, and state efforts. The highest level objective identified in the COT Report is identified as to meet the objectives of the 2006 WAFWA Greater Sage-Grouse Comprehensive Strategy of “reversing negative population trends and achieving a neutral or positive population trend." The COT Report identifies the threats to be addressed to meet overall conservation objectives. Additional information on the COT Report is provided on the USFWS website: http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/COT/COT-Report-with-Dear-Interested-Reader-Letter.pdf.

The USFWS will use the COT Report to review B2H actions and determine whether these actions will contribute toward the need to list the species under the federal ESA. For new transmission lines and roads, the following COT Report criteria are important in the overall listing review: Avoid Priority Area of Conservation and other high quality Greater Sage-Grouse habitat; minimize via actions such as undergrounding and narrow-separation co-location; assess all direct and indirect effects; assign value (mitigation ratios) based on habitat or population characteristics; apply good mitigation principles and standards when designing mitigation actions (see USFWS rangewide mitigation framework for additional guidance), and ensure the project (in its entirety) results in a net conservation benefit to Greater Sage-Grouse.

USGS Baseline Environmental Report

To augment BLMs planning on a biological and meaningful scale for Greater Sage-Grouse, a Baseline Environmental Report (BER) for Greater Sage-Grouse was produced by the USGS (Manier et. al. 2013). The BER is a science support document that provides information to put planning units and issues into the context of the larger WAFWA Greater Sage-Grouse Management Zones. The BER Report examines each threat identified in the USFWS's listing decision published on March 15, 2010. For each threat, the BER summarizes the current, scientific understanding of various impacts on Greater Sage-Grouse populations and habitats. When available, the BER also reports patterns, thresholds, indicators, metrics, and measured responses that quantify the impacts of each specific threat. Additional information on the BER is provided on the USGS website: http://pubs.usgs.gov/of/2013/1098/.

Greater Sage Grouse Ecology and Conservation of a Landscape Species and Its Habitats (Greater Sage-Grouse Monograph)

Thirty-eight federal, state, university, and nongovernmental experts collaborated to produce new scientific information about Greater Sage-Grouse populations, sagebrush habitats, and relationships among Greater Sage-Grouse, sagebrush habitats, and land use. The information was published as a scientific monograph in the series *Studies in Avian Biology* under the management of the Cooper Ornithological Society (Knick and Connelly 2011). The Greater Sage-Grouse Monograph is an important foundation for developing conservation strategies and actions, and provides a comprehensive synthesis of scientific information on the biology and ecology of the Greater Sage-Grouse.

3.2.4.3 Issues Identified for Analysis

The following wildlife-related issues were raised by the public, Native American tribes, or federal and state agencies during scoping or are issues that must be considered as required by law or regulation. The following statements summarize the issues identified that are associated with wildlife.

- What effects on wildlife habitats such as fragmentation, fire regimes, and spread or introduction of invasive species would occur?
- What would the effects on rare and/or sensitive wildlife habitats such as caves, lava tubes, riparian areas, and aquatic habitats be?
- What effects would there be on sensitive seasonal wildlife habitat, such as big-game wintering or birthing areas and migration routes?
- What would be the effects be on species with no special status, including birds, small mammals, reptiles and amphibians?
- Would habitat falling into the various ODFW habitat categories be affected? If so, how?
- Would big-game species and designated big-game areas be impacted?
- Would the project have adverse effects on sensitive insects, such as bees?
- Would the project adversely affect raptor nests?
- What would be the effects on special wildlife areas, such as Wildlife Management Areas?
- Would the Oregon Conservation Strategy be implemented in project planning, construction, and operation?
- Would the project cause an increase in bird and bat electrocutions and collisions with towers, wires, and other structures?
- What would be the project effects on migratory birds?
- What would be the project effects on species considered of religious, cultural or economic value to Native American tribes?
- Will the B2H Project result in fragmentation of key wildlife habitat?
- Would the B2H Project comply with the ODFW habitat categories, as described in the ODFW Habitat Mitigation Policy (OAR 635-415-00)?
- Would the project affect threatened, endangered, proposed, or sensitive wildlife species?
- Would the route disturb sage-grouse habitat?
- Would waterfowl and shorebird migration routes be affected?
- Would the transmission line injure or kill birds that perch on or strike the lines?
- Would bats and their migratory corridors be affected by the transmission line?
- Would the transmission line affect elk, antelope, deer, or bighorn sheep?
- What would be the effects on bald and golden eagles?
- Would the B2H Project negatively affect special status wildlife species?
- Would federal critical habitat be impacted?
- Would the B2H Project negatively impact Greater Sage-Grouse and their habitat and cause an increase in predation?
- What would the effects of ground disturbance have on pygmy rabbits or the Washington ground squirrel?

3.2.4.4 Methodology

Data Sources

The list of special status wildlife species that may occur in the B2H Project area was derived by identifying the federally listed endangered, threatened, and candidate species that occur in Oregon and Idaho; the species listed as endangered, threatened, and sensitive in Oregon; the USFS sensitive species that occur on the Wallowa-Whitman National Forest; and BLM sensitive species that occur in Oregon and Idaho. This list was refined to include only species that have ranges in the vicinity of the analysis area; the list was then further refined to identify those species known to occur in the analysis area.

Information obtained from the following sources was utilized to evaluate wildlife resources within the project analysis area:

- USFWS iPaC – Information, Planning and Conservation System
- ORBIC database (ORBIC, formerly the Oregon Natural Heritage Information Center, maintains a database of occurrence records for sensitive species in Oregon; this database represents voluntarily documented and submitted records rather than records derived through systematic survey. Therefore, the absence of a record does not necessarily indicate that the species is not present. (Note: ORBIC requested that these rare-species occurrence locations be kept confidential.)
- ODFW Oregon Conservation Strategy
- Consultation with appropriate agencies
- USFS Regional Forester's special-status-species list (January 31, 2008)
- BLM State Director's special-status-species list (February 7, 2008)
- Peer-reviewed literature
- NatureServe web application

Data sources for GIS (geographic information system) analyses included the following:

BLM Idaho, BLM Oregon

- Greater Sage-Grouse PPH and PGH

BLM Oregon

- GeoBOB database
- Wildsite data (pronghorn winter range)

IDFG

- *Wildlife (Big Game) Management Units*
- Bighorn sheep core herd home ranges
- Bighorn sheep population management units
- Bighorn sheep lambing areas

- Greater Sage-Grouse lek locations
- Mule deer winter range
- Pronghorn winter range

ODFW

- Wildlife (Big Game) Management Units (MUs)
- Bighorn sheep occupied habitat
- Elk winter range
- Greater Sage-Grouse lek locations (leks used in the analysis included those with a status of occupied, occupied pending, and unoccupied pending)
- Greater Sage-Grouse core areas and low density areas
- Mule deer winter range

ORBIC

- Location data for various special-status species

Tetra Tech, Inc. (Idaho)

- Greater Sage-Grouse lek locations identified during Project-specific surveys
- Washington ground squirrel colonies identified during Project-specific surveys

USFS

- The Wallowa-Whitman National Forest conducted an analysis of management indicator species using USFS GIS data and provided a report with information to be included in this Draft EIS

Only existing data were used for special-status species analysis conducted for most species, as agreed to by the agencies as part of the phased study plan approach. However, Greater Sage-Grouse and Washington ground squirrel survey data collected for this project were included in the analysis because all areas of suitable habitat were surveyed, allowing for an even comparison throughout the analysis area for all alternatives where suitable habitat is present.

ANALYSIS AREA

The analysis area for wildlife habitat consisted of a 1-mile-wide corridor aligned with the Proposed Action and alternatives (0.5 mile on either side of the Proposed Action and alternatives centerline). This area was chosen because it was considered large enough to capture the extent of potential direct and indirect impacts on habitat that could occur during construction and operations of the B2H Project. For some species, where species-specific surveys were conducted (i.e Washington ground squirrel), the analysis included a ‘site boundary’ which included a 500 foot-wide corridor including the transmission line, substation footprints, tensioning sites, multi-use areas and access roads.

A 10 mile-wide corridor (5 miles on either side of the Proposed Action and alternatives centerlines) was used for identification of special status species that could potentially be impacted by the B2H Project. This larger analysis area was chosen to account for the potential uncertainty of the presence (limited survey coverage) and locations (inaccurate or historical mapping techniques) of many special status species populations in the vicinity of the Project Area. Any species with known or suspected occurrences within the 10-mile-wide analysis area were considered to be present within the appropriate vegetation community subtype(s) that could potentially be affected by the Proposed Action and the alternatives.

In an effort to effectively organize the overall analysis, the entire analysis area was divided into six project segments. These segments are mentioned throughout the Affected Environment and analyzed in more detail for specific wildlife groups and species in the Environmental Consequences section.

The watershed level (i.e., fifth level hydrologic unit code [HUC]) is used as the analysis area to assess impacts to USFS MIS and for activities on USFS lands.

3.2.4.5 Affected Environment

Wildlife Habitat

The analysis area traverses four ecoregions: Columbia Plateau, Blue Mountains, Northern Basin and Range, and Snake River Plain. Descriptions of each of the four ecoregions in which the B2H Project occurs are provided in Section 3.2.3. Primary vegetation communities are described in detail in Section 3.2.3 and these community types are equivalent to the wildlife habitat types discussed throughout this section.

Wildlife species utilize a variety of habitats in the analysis area. These habitats provide important features such as foraging areas, breeding and wintering range, and cover for a range of bird, mammal, amphibian, reptile, and fish species common to eastern Oregon and southwestern Idaho.

The existing wildlife habitats within the B2H Project analysis area are generally categorized as; grassland, shrubland, forest/woodland, wetlands/riparian/surface water, bare ground/cliff/talus, agriculture, and developed/disturbed areas. Although in smaller precentages than predominant habitat types within the analysis area, wetland/riparian habitats, which typically support the highest diversity of wildlife species, do occur. Wildlife habitat types correspond to the primary vegetation community types discussed in 3.2.3 Vegetation Resources. Each of these types exhibits existing fragmentation from land uses such as; roadway development, utility rights-of-way, agricultural use, livestock grazing practices, and wildfire. However, large blocks of contiguous habitat do occur throughout the analysis area. Wildlife populations in the vicinity of existing infrastructure (i.e. utility rights-of-way and roadway facilities and corridors) are likely to have already experienced some impacts associated with habitat fragmentation and disturbance such as; reduced carrying capacity, lower reproductive success, higher susceptibility to predation, and reduced mobility and restricted home ranges. Table B.4-2 (Appendix B.4) lists some of the typical wildlife species expected to occur within each of these habitat types.

Federally Proposed, Endangered, Threatened, and Candidate Species

The USFWS provided a list of threatenened, endangered, proposed, and sensitive species that have the potential to occur in the Project area for consideration in analysis (USFWS 2014a, b). There is no designated or proposed critical habitat for threatened or endangered wildlife species in the Affected Environment.

Seven wildlife species with potential occurrence and/or suitable habitat within the Project area are dicussed in Table 3-54.

Although no species listed under the ESA occur in the analysis area, three candidate species under consideration for listing were identified by the USFWS and include; Columbia spotted frog (Great Basin distinct population segment - DPS), Greater Sage-Grouse (Columbia Basin DPS), and Washington ground squirrel. As a result of a settlement agreement with the Center for Biological Diversity (2011), the USFWS agreed to publish a final listing decision for all three candidate species by the end of fiscal year detailed information is provided for these species below.

One species with interim status, with potential listing under review, black-backed woodpecker has suitable habitat in the analysis area. The black-backed woodpecker is discussed in the Special Status Species section below. On August 13, 2014, the USFWS withdrew its proposal to list the North American wolverine under the ESA. As a result of this action, the wolverine automatically returns to the Regional Sensitive Species list(s) when the withdrawal is finalized (expected 30 days after the Federal Register publication date, unless delayed by litigation). Although there is some peripheral / secondary habitat (dispersal) available in the analysis area for wolverine, there is no verified occurrence or source habitat. Individuals would likely only be found in the analysis area while dispersing between habitats. This species is, therefore, not discussed in more detail. One delisted species, gray wolf, is known to occur and has mapped breeding territories in the analysis area. Gray wolf is also discussed in the Special Status Species section. On October 3, 2014, the western distinct population segment of the yellow-billed cuckoo was formally listed as threatened. In accordance with the listing, critical habitat was designated. No critical habitat is designated in Oregon, and the nearest mapped critical habitat in Idaho is in the central portion of the state, well outside the boundaries of the analysis area. Due to the lack of source habitat and highly limited availability of secondary and dispersal (‘peripheral’) habitat, Canada lynx is not expected to occur within the analysis area. In addition, none of the Oregon counties listed as locations where lynx or known to or believed to occur are within the analysis area (USFWS 2014). This species is not discussed further.Table 3-54 identifies the federally proposed, endangered, threatened, and candidate species with potential habitat or occurrence within the analysis area, Potential occurrence is further delineated by segment.

Table 3-54. Federally Proposed, Endangered, Threatened and Candidate Wildlife Species with Potential Occurence in the B2H Analysis Area (by analysis segment)

Species	Status [1]	Primary Wildlife Habitat Type (Source Habitat)	Occurrence In Analysis Area [2]	Occurrence Potential by Segment [3]					
				1	2	3	4	5	6
Amphibians									
Columbia Spotted Frog (*Rana luteiventris*), Population: Great Basin DPS	C	Wetland/Riparian/ Open Water (Open Water)	HD/D	N	N	N	M	M	M
Birds									
Greater Sage-Grouse (*Centrocercus urophasianus*), Population: Columbia Basin DPS	C	Shrubland (Sagebrush)	HD/D	N	K	K	K	K	K
Yellow-billed Cuckoo (*Coccyzus americanus*), Population: Western U.S. DPS	T	Wetland/Riparian/ Open Water (Riparian)	HN/N	N	N	N	N	N	N
Mammals									
North American Wolverine (*Gulo gulo luteus*)	P - T [4]	Forest/Woodland (Sub-Alpine/Montane Forest)	HD/S (dispersal only)	N	M	M	N	N	N
Canada Lynx (*Lynx canadensis*)	T	Forest/Woodland (Sub-Alpine/Montane Forest and Lodgepole Pine)	HN/N	N	N	N	N	N	N
Gray Wolf (*Canis lupus*) Population: Rocky Mountain DPS	DL	All habitats (habitat generalist)	HD/D	M	K	K	M	M	M
Washington Ground Squirrel (*Urocitellus washingtoni*)	C	Shrubland (Sagebrush-steppe) and Grassland	HD/D	K	N	N	N	N	N

Table Source: Official US Fish and Wildlife Species list for the Boardman to Hemingway Transmission Line Project (June 2014).

Table Notes: [1] Status Designations: C = Endangered Species Act Candidate Species, P = Proposed, T = Federally Threatened, DL = Federally Delisted. [2] HD = Habitat documented or suspected within the analysis area or near enough to be impacted by project activities, HN = Habitat not within the analysis area or affected by its activities, D = Species documented in general vicinity of project activities, S = Species suspected in general vicinity of project activities, N = Species not documented and not suspected in general vicinity of project activities. [3] K = Known to occur (documented within the analysis area), L = Likely to occur (documented within project vicinity outside analysis area), M = May occur (not documented in project vicinity but suitable habitat is present in analysis area and the project is within the species' range), N = Does not occur. [4] On August 13, 2014, the USFWS withdraw the petition to list the North American wolverine in the contiguous United States as a threatened species under the Endangered Species Act (ESA).

COLUMBIA SPOTTED FROG

Regulatory Status

In May 1989, the USFWS was petitioned to list the Columfbia spotted frog under the ESA. In May 1993, the species was placed in a 12-month 'warranted but precluded from listing' status (58 FR 27260, April 23, 1993). Under current conservation agreements, the listing status may be revised by 2015.

The USFWS accepts species-specific genetic and geographic differences in Columbia spotted frogs based on Green *et al*. (1996, pp. 377–388; 1997, pp. 2–7), and the populations are divided into five distinct population segments:

- Main (Northern) distinct population segment (Alaska, British Columbia, Alberta, Wyoming, Montana, north and central Idaho, eastern Washington, and northeastern Oregon)
- Great Basin distinct population segment (southwestern Idaho, northern Nevada, and eastern Oregon)
- West Coast distinct population segment (western Washington and Oregon and northeastern California)
- Wasatch Front distinct population segment (Utah)
- West Desert distinct population segment (Utah)

All of the distinct population segments, except for the main population, were classified as candidate species by the USFWS's 12-month petition finding. In addition to its ESA candidate status, the only population within the analysis area, Great Basin distinct population segments, is also considered a BLM sensitive species in Idaho and Oregon and is considered vulnerable by the State of Oregon.

Taxonomy and Life History

Spotted frogs (*Rana pretiosa*) were first described as a single species and later split into two subspecies, *R. pretiosa pretiosa* and *R. pretiosa luteiventris*. More recently, work identifying species-specific genetic and geographic differences has resulted in characterization of populations in western Washington and Oregon and northeastern California as Oregon spotted frogs (*R. pretiosa*) and the remainder of the populations as Columbia spotted frogs (*R. luteiventris*). Based on further geographic and genetic characterization, Columbia spotted frogs in southwest Idaho, southeast Oregon, and northeast and central Nevada are part of the Great Basin population of Columbia spotted frogs (Figure 3-14). It was previously thought that populations in northeast Oregon were part of the Great Basin population; however, it was later determined that these populations belong to the Northern or main population segment (USFWS 2011).

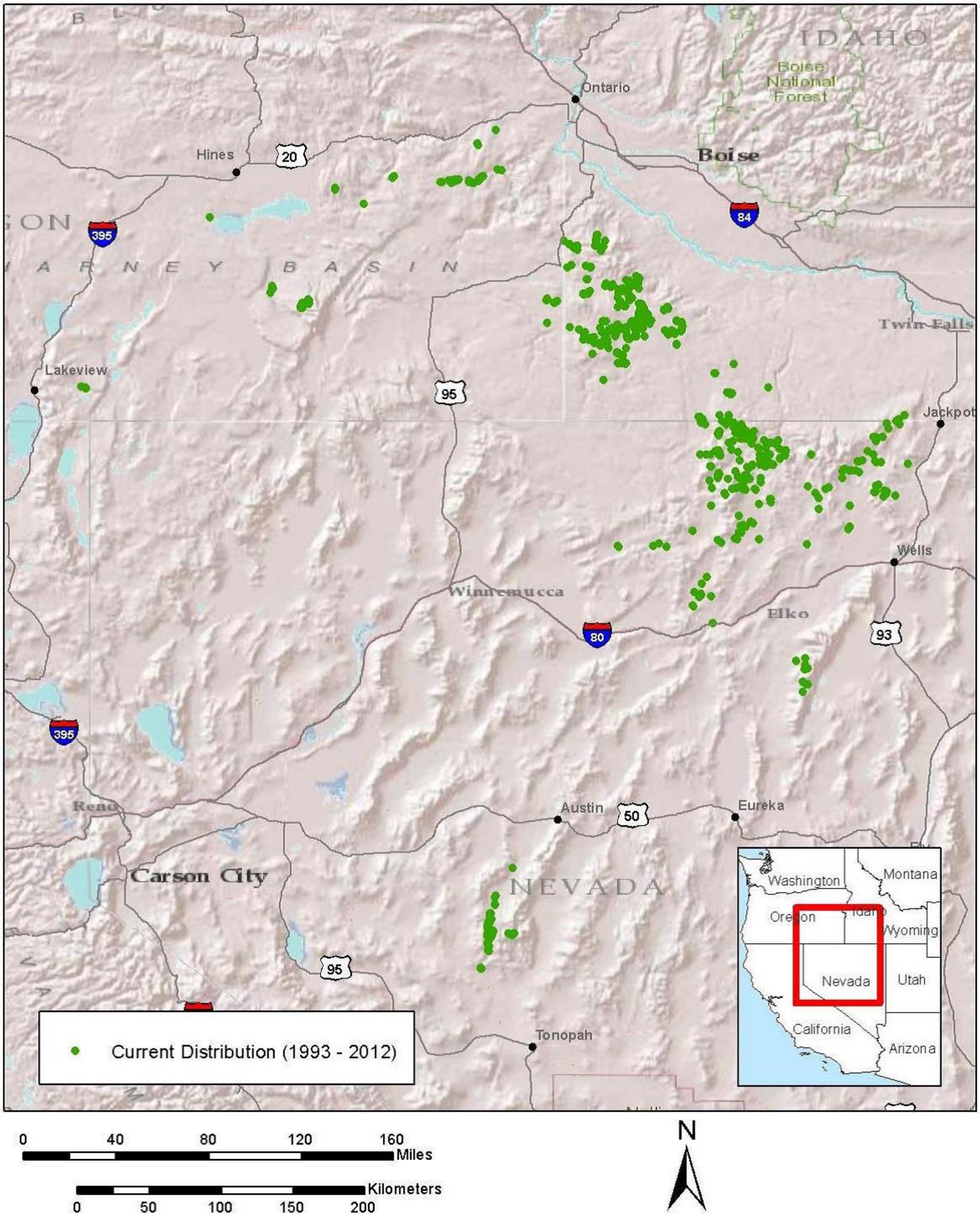


Figure 3-14. Distribution of Columbia Spotted Frog, Great Basin Distinct Population Segments (1993–2012)

(Figure Source: USFWS 2013)

Distribution and Habitat Requirements

Prior to 1995, only six historical sites were known in the Owyhee Mountain range in Idaho and only 22 sites were known in southeastern Oregon in Malheur County. The current range of the Great Basin distinct population segments of Columbia spotted frog populations in Oregon and Idaho (Owyhee Subpopuation) appear to be widely distributed throughout southwestern Idaho (Owyhee County) and southeastern Oregon (east of Highway 395 and south of Highway 20, including the Owyhee and Steens Mountains in Lake, Harney and Malheur Counties). Throughout their current range, many populations of Columbia spotted frog within the Great Basin distinct population segments are small and fragmented.

Habitat for the Great Basin distinct population segments is characterized by sagebrush steppe and associated stream and pond environments. Columbia spotted frogs are found near bodies of slow-moving water, including lakes, ponds, sluggish streams, and marshes. During the summer they may disperse into upland forests, grasslands, and shrublands; however, these upland habitats must still be closely associated with moist vegetated areas. Aquatic habitat for the spotted frog consists of the littoral zone of emergent vegetation, including willows (*Salix* spp.), grasses and sedges, and submerged aquatic plants. The Columbia spotted frog over-winters in or adjacent to perennial waterbodies that remain above freezing temperatures and are well oxygenated, such as streams, springs, and spring-fed lakes. Several studies have identified general associations between National Wetland Inventory classifications and Columbia spotted frog occurrences (Patla and Keinath 2005). The wetland classifications associated with source habitat for Columbia spotted frogs include palustrine wetlands with shrub-scrub, emergent, aquatic bottom, and intermittent riverine streambed sites and water regimes with seasonally flooded, semi-permanently flooded, or saturated areas.

Threats to Survival

Habitat modification and destruction is a major threat to the Columbia spotted frog. The Great Basin population is particularly susceptible to habitat modification (Noss et al. 2006, Tait 2007). Habitat degradation and fragmentation has resulted from agricultural development, intensive livestock grazing, spring development, urbanization, and mining activities. Additional threats to this species include predation by nonnative species (e.g., bullfrog) and possibly climate change (NatureServe 2010).

Occurrence in the Analysis Area

Due to the close proximity of preferred habitat types for both the Northern and Great Basin populations of Columbia spotted frog within the vicinity of US Highway 20, some suitable habitat for both may overlap in Segment 4. Based on the best available science, the USFWS determined that any suitable habitat located south of US Highway 20 and east of US 395 in Oregon and in the Owyhee Mountains in Idaho is considered potentially occupied habitat for Columbia spotted frog, Great Basin DPS (Table 3-55, Figure 3-14). One of the primary habitat types for spotted frog, emergent wetlands, can be difficult to accurately delineate without site-specific field data. Areas classified as open water include ponds, lakes, streams, and rivers. In addition, this land cover type might include two anthropomorphic wetland types; Introduced Riparian Vegetation, and Ruderal Wetland. Most of the open water habitats in the analysis area are in the form of intermittent streams that are fed by stormwater runoff, although perennial watercourses and surface water diversions for agriculture also occur. Some acreage was included in emergent wetand acreages. Open water calculated for the Draft EIS is overestimated. Wetland determinations, and associated categorization, created for the Draft EIS includes data that may not accurately depict actual features and acreages needed for the fine scale analysis for this species. The information provided may be revised, as needed, between release of the Draft EIS and Final EIS. Existing habitat within the analysis area (1291 acres for all alternatives) for Columbia spotted frog, with acreages broken out for scrub—shrub and forested wetlands, is listed in Table 3-55. Additional suitable habitat is expected to be present in the analysis area.

Table 3-55. Existing Columbia Spotted Frog Habitat (Great Basin DPS) in the Analysis Area (Segments 5 and 6)

Proposed Alternatives by County	Acres of Wetlands,Riparian, Open Water (% of analysis area)	Columbia spotted frog habitat (Wetland type)	
		Scrub-Shrub	Forested
Proposed Action (Malheur County)	306 (1.2%)	23	33
Double Mountain	288 (1.1%)	23	33
Malheur A	315 (1.2%)	33	28
Malheur S	311 (1.1%)	30	27
Proposed Action (Owyhee County)	71 (0.5%)	0	61

Greater Sage-Grouse

Regulatory Status

The rangewide population of Greater Sage-Grouse became a candidate species for listing under the ESA as threatened or endangered on March 4, 2010 (75 FR 13909). USFWS stated that ESA listing of the species is warranted, but is precluded by other higher priority listing actions (USFWS 2010a).

In addition to its ESA candidate status, the Greater Sage-Grouse is included as a BLM and USFS sensitive species, and is considered vulnerable by the State of Oregon. For management of Greater Sage-Grouse in Oregon, the ODFW published a Greater Sage Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat in 2011 (ODFW 2011) and an Oregon Sage Grouse Mitigation Framework for Sage Grouse Habitats in 2012 (ODFW 2012). For management of Greater Sage-Grouse in Idaho, the Idaho Greater Sage-Grouse Advisory Committee (2006) published management guidance in the Conservation Plan for the Greater Sage-grouse in Idaho. This plan refers to local working group plans for more specific direction, which in the vicinity of the analysis area includes the Owyhee County Sage-grouse Management Plan (Owyhee County Sage-grouse Local Working Group 2013).

Life History

Greater Sage-Grouse breeding occurs between late February and early June and centers on a lek or strutting ground. Leks are usually located in open areas with greater visibility than surrounding areas. Male and female Greater Sage-Grouse attend leks where males perform ritualized courtship displays in the early morning hours. Mating is thought to occur on the lek with egg laying occuring soon after. All parental-investment functions (e.g., nesting, early and late brood rearing) are performed by the female. Nesting usually occurs under sagebrush within 3 miles of a lek (ODFW 2011). Greater Sage-Grouse chicks are dependent on insect prey base after hatching (Johnson and Boyce 1990), but their diet shifts almost entirely to sagebrush as local vegetation desiccates in the late summer and fall (Schroeder et al. 1999).

Distribution and Habitat Requirements

Historical distribution of the Greater Sage-Grouse includes 13 U.S. states (Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, North Dakota, Nebraska, and Arizona) and three Canadian provinces (British Columbia, Alberta, and Saskatchewan) (Schroeder et al. 1999, Schroeder et al. 2004, Young et al. 2000). Current distribution represents approximately 56 percent of historical range across 11 U.S. states (Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, and North Dakota) and two Canadian providences (Alberta and Saskatchewan) (Schroeder et al. 2004).

The distribution of Greater Sage-Grouse is closely aligned with the distribution of sagebrush-dominated landscapes (Schroeder et al. 2004). Greater Sage-Grouse require large, intact and connected expanses of sagebrush shrubland to exist (Aldridge et al. 2008; Wisdom et al. 2011). Greater Sage-Grouse typically occupy sagebrush vegetation but may also use a variety of other habitats (e.g., riparian meadows, and agricultural lands) intermixed in a sagebrush-dominated landscape (Shepard 2006). Sagebrush cover, height, and vegetative vertical structure have greater importance than is the presence of particular sagebrush species when characterizing suitable Greater Sage-Grouse habitat (Connelly et al. 2000).

In Idaho, sagebrush patches adjacent to large, abrupt patches of grass or forb-dominated habitat (usually burned areas or crested wheatgrass seedings) received much less use on their periphery than more interspersed sagebrush patches (Shepard 2006). Aldridge and Boyce (2007) found Greater Sage-Grouse selected large expanses of sagebrush and avoided anthropogenic edge during the breeding season. Thus, the use of fragmented habitat by Greater Sage-Grouse is dependent upon the juxtaposition of these habitats in relation to sagebrush and the hazards to birds using these areas (Connelly et al. 2011b).

Greater Sage-Grouse habitat use varies by season. Breeding and brood-rearing habitat (i.e., spring and summer) is characterized by 10 to 25 percent sagebrush cover with an abundant grass and forb understory of greater than 15 percent cover. The grass component is important in secluding nest sites, and forbs are important as browse for Greater Sage-Grouse and for providing habitat for protein-rich insects, which are necessary for chick growth. Suitable late brood-rearing and summer habitats include a variety of sagebrush communities that are capable of supporting a continued source of succulent forbs and insects, higher-elevation habitats where forbs are still present later in the year, agricultural fields, lower-elevation meadows, moist grassy areas, and riparian areas adjacent to sagebrush communities. Winter habitat consists of relatively large areas of sagebrush with 10 to 30 percent canopy cover that provide cover and forage above the snow level (Connelly et al. 2000). Greater Sage-

Grouse are capable of traveling long distances, up to 50 miles, between seasonal habitats when necessary (Leonard et al. 2000).

The ODFW used average maximum counts of lekking male Greater Sage-Grouse to identify four lek density strata (percent of breeding population): very high (25 percent), high (50 percent), moderate (75 percent), and low (100 percent). Lek density strata, winter habitat use areas, and connectivity corridors were integrated to classify Greater Sage-Grouse habitat into one of two categories: core areas and low density areas. Core area habitat consists of all sagebrush types or other habitats that support Greater Sage-Grouse that are encompassed by areas of very high, high, and moderate lek density strata; where low lek density strata overlap local connectivity corridors; or where known winter habitat-use polygons overlap with either low lek density strata, connectivity corridors, or occupied habitat. Low density area habitat encompasses the remainder.

IM 2012-044 directs the BLM to collaborate with state wildlife agencies to identify and map two categories of Greater Sage-Grouse habitat:

- PPH: Areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas; and
- PGH: Areas of occupied seasonal or year-round habitat outside of priority habitat.

In Oregon, BLM developed its PPH and PGH map based in large part on the ODFW Sage Grouse Core Areas Map. All core area habitats are classified as PPH. All low density habitat areas are classified as PGH. Because ODFW's low density habitat area does not include all currently occupied Greater Sage-Grouse habitat as modeled by Durtsche et al. (2010), BLM has added these areas to complete its PGH areas. In Idaho, PPH and PGH were identified based on a model incorporating Greater Sage-Grouse breeding bird density and lek connectivity models, informed with additional ancillary broad scale habitat data, seasonal habitat maps, connectivity information, expert opinion, population persistence model, local priority areas and agriculture and conifer filters (Makela and Major 2012).

There is little information available regarding minimum sagebrush patch sizes required to support populations of Greater Sage-Grouse. This is due in part to the migratory nature of some but not all Greater Sage-Grouse populations, the lack of connectivity between seasonal habitats, and differences in local, regional, and range-wide ecological conditions that influence the distribution of sagebrush and associated understories. Where home ranges have been reported, they are extremely variable (1.5 to 238 square miles; Connelly et al. 2011a). Investigations from Idaho and Wyoming suggest that relatively large blocks of sagebrush habitat (more than 9,900 acres) are critical to successful reproduction and over-winter survival (Leonard et al. 2000; Walker et al. 2007). Occupancy of a home range is also based on multiple variables associated with both local vegetation characteristics and landscape characteristics (Knick et al. 2013). Pyke (2011) estimated that greater than 9,884 acres (4,000 hectares) was necessary for population sustainability; however, Pyke did not indicate whether this value was for migratory or non-migratory populations, or if this included juxtaposition of all seasonal habitats. Large seasonal and annual movements emphasize the large landscapes required by the Greater Sage-Grouse (Knick et al. 2003; Connelly et al. 2011a).

Greater Sage-Grouse populations may be nonmigratory or migratory, moving between or among seasonal use areas (Connelly et al. 2011a). Greater Sage-Grouse in Oregon generally exhibit one-stage migratory behavior with the largest movements (10 miles) occurring between breeding and summer habitats, which corresponds with elevational movements in mountains (Hagen 2011). Movements between summer and winter habitats (3 to 9 miles) were generally directed toward breeding areas, although Greater Sage-Grouse may travel considerable distances (over 19 miles) in severe winters to find food and cover (USFWS 2013).

Threats to Survival

Greater Sage-Grouse numbers have declined rangewide. Population declines have coincided with a decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004).

Knick and Connelly (2011) found that fire and human disturbance were the primary factors influencing fate of leks. Knick et al. (2003) reported 95 percent of active leks (3,184 leks) in their western states study area were in landscapes with less than 3 percent development; all lands surrounding leks were less than 14 percent developed.

Wildfire is one of the top threats to Greater Sage-Grouse in Idaho and Oregon. It causes loss of habitat, and has been identified as a primary factor associated with Greater Sage-Grouse population declines (USFWS 2010a). Greater Sage-Grouse typically select nest sites near the largest sagebrush plants that have a good herbaceous understory, which is precisely where wildfire or prescribed fire tends to travel. Thus, the mosaic of habitat that results from burning may actually diminish their productivity for Greater Sage-Grouse. Fire can reduce shrub cover, increase the amount of invasive plant species, and large intense fires can reduce habitat diversity. However, fire can also have beneficial impacts on Greater Sage-Grouse habitat. Fire can reduce juniper cover and, under the right conditions, return sites to a more suitable mix of bunchgrass and sagebrush over time.

Juniper encroachment, another threat to Greater Sage-Grouse, affects over 12 million acres in the Great Basin alone (Miller et al. 2008). Conifer encroachment fragments sagebrush habitat for Greater Sage-Grouse both by removing suitable cover (i.e., sagebrush) and by providing tall structures (i.e., trees) that attract predators of Greater Sage-Grouse, such as corvids (Doherty et al. 2008, 2010). A decline of shrubs is the most documented shift in understory vegetation following juniper encroachment. Mountain big sagebrush sites show 20 to 25 percent declines in shrub cover in response to trees reaching 50 percent of the maximum site potential (Miller et al. 2000). Corvid abundances have been positively correlated with higher nest predation rates of many birds, including Greater Sage-Grouse (Hagen 2011).

Energy development has been identified as a threat to Greater Sage-Grouse. Direct and indirect disturbance, habitat loss, and fragmentation due to energy development have resulted in Greater Sage-Grouse population declines (USFWS 2013).

Comparing environmental conditions and levels of human disturbance on areas of former range (i.e., extirpated range) with areas still occupied by Greater Sage-Grouse (i.e., occupied range), Wisdom et al. (2011) identified five key factors most likely to lead to extirpation of local populations: sagebrush area, elevation, distance to transmission lines, distance to cellular towers, and land ownership.

While the amount of habitat available to Greater Sage-Grouse is very important, habitat pattern and quality is just as critical to long-term survival of the species. Fragmentation of habitat into smaller patches can result in extirpation of local Greater Sage-Grouse populations when functional connectivity among patches is lost. Leks separated by distances greater than 11 miles could be isolated due to decreased probability of dispersals from neighboring leks (Connelly et al. 2000). Isolation and reduced connectivity increases the probability of loss of genetic diversity and extirpation from stochastic events (Knick and Hanser 2011).

Occurrence in the Analysis Area

Greater Sage-Grouse and their habitat occur in Segments 2 through 6 of the analysis area (Table 3-54). Figure 3-15 displays the distribution of Greater Sage-Grouse habitat in the analysis area.

Washington Ground Squirrel

Regulatory Status

The Washington ground squirrel is a candidate for listing under the ESA (USFWS 1994, 59 FR 58982). The USFWS has assigned a listing priority number of 5 to the Washington ground squirrel (on a scale of 1 to 12, with 1 indicating the highest listing priority; 75 FR 69239).

In addition to its ESA candidate status, the Washington ground squirrel is included as a BLM sensitive species and is listed as endangered by the State of Oregon (2000). In Oregon, some threats are being addressed as a result of its state listing, and by implementation of the Threemile Canyon Farms Multi-Species Candidate Conservation Agreement with Assurances, which protects 36 percent of known Oregon breeding colonies, one-third of known occupied habitat, from agricultural development.

Taxonomy and Life History

The Washington ground squirrel is diurnal and semi-fossorial. It has a prolonged period of seasonal dormancy, escaping extremes of both winter and summer. Adults emerge from hibernation between January and early March, and breed soon after (Rickart and Yensen 1991).

Washington ground squirrels eat a broad range of succulent forb and grass stems, buds, leaves, flowers, roots, bulbs, seeds; they also eat insects and various agricultural crops (Rickart and Yensen 1991). Washington ground squirrels usually live less than 5 years and have high annual mortality rates. Causes of mortality included starvation or freezing during estivation/hibernation, predation by mammals and various birds of prey, disease, and human interference (Delavan 2008; USFWS 2010b).

Delavan (2008) found that home range sizes varied from 435 m^2 to 77,021 m^2, with males having significantly larger home ranges than females, and home range sizes decreasing with increasing food availability. Males are more mobile and disperse greater distance than females. In Oregon, juvenile male dispersal distances ranged from 40 to 3,521 meters (131 to 11,551 feet), with a median of 880 meters (2,887 feet) (Klein 2005; Delavan 2008).

Distribution and Habitat Requirements

The Washington ground squirrel is endemic to the Deschutes–Columbia Plateau sagebrush-steppe and grassland communities in eastern Oregon and south-central Washington (Figure 3-16). Approximately two-thirds of the Washington ground squirrel total historical range has been converted to agricultural and residential uses, and recent surveys suggest that its current range has contracted toward the center of its historical range (75 FR 69239). This species now occurs in Washington, east of the Columbia River in Adams, Douglas, Franklin, Grant, Lincoln, and Walla Walla Counties; and in north-central Oregon in the northern halves of Gilliam and Morrow Counties and in northwestern Umatilla County (USFWS 2010b; 75 FR 69222).

The most densely occupied, and only, territories in Oregon occur on the Boardman Grasslands Important Bird Area on Naval Weapons Systems Training Facility Boardman-managed lands and the adjacent Boardman Conservation Area, managed by the Nature Conservancy (Audubon Society 2013). The Important Bird Area consists of these two land parcels, totaling 69,000 acres. The parcels represent the largest remaining single block of predominantly native, ungrazed shrub steppe and grassland habitats in the Columbia Basin.

Washington ground squirrels are strongly associated with sagebrush-steppe and native bunchgrass habitats, and use areas with high sagebrush canopy cover and high grass and forb density (Delavan 2008, USFWS 2010b). Soil types essential for burrow excavation by Washington ground squirrel are distributed sporadically within the species’ range, and have been seriously fragmented by human development in the Columbia Basin, particularly by conversion to agricultural use (Betts 1990; USFWS 2004).

Threats to Survival

Overall threats to the survival for the Washington ground squirrel are summarized in the USFWS's 2010 candidate review (75 FR 69239):

Agricultural, residential, and wind power development along with other forms of development continue to eliminate Washington ground squirrel habitat in portions of its range. Throughout much of its range, Washington ground squirrel are threatened by the establishment and spread of invasive plant species, particularly cheatgrass, which alter available cover and food quantity and quality, and increase fire intervals. Additional threats include habitat fragmentation, recreational shooting, genetic isolation and drift, predation, disease, drought, and possible competition with related species in disturbed habitat at the periphery of their range.

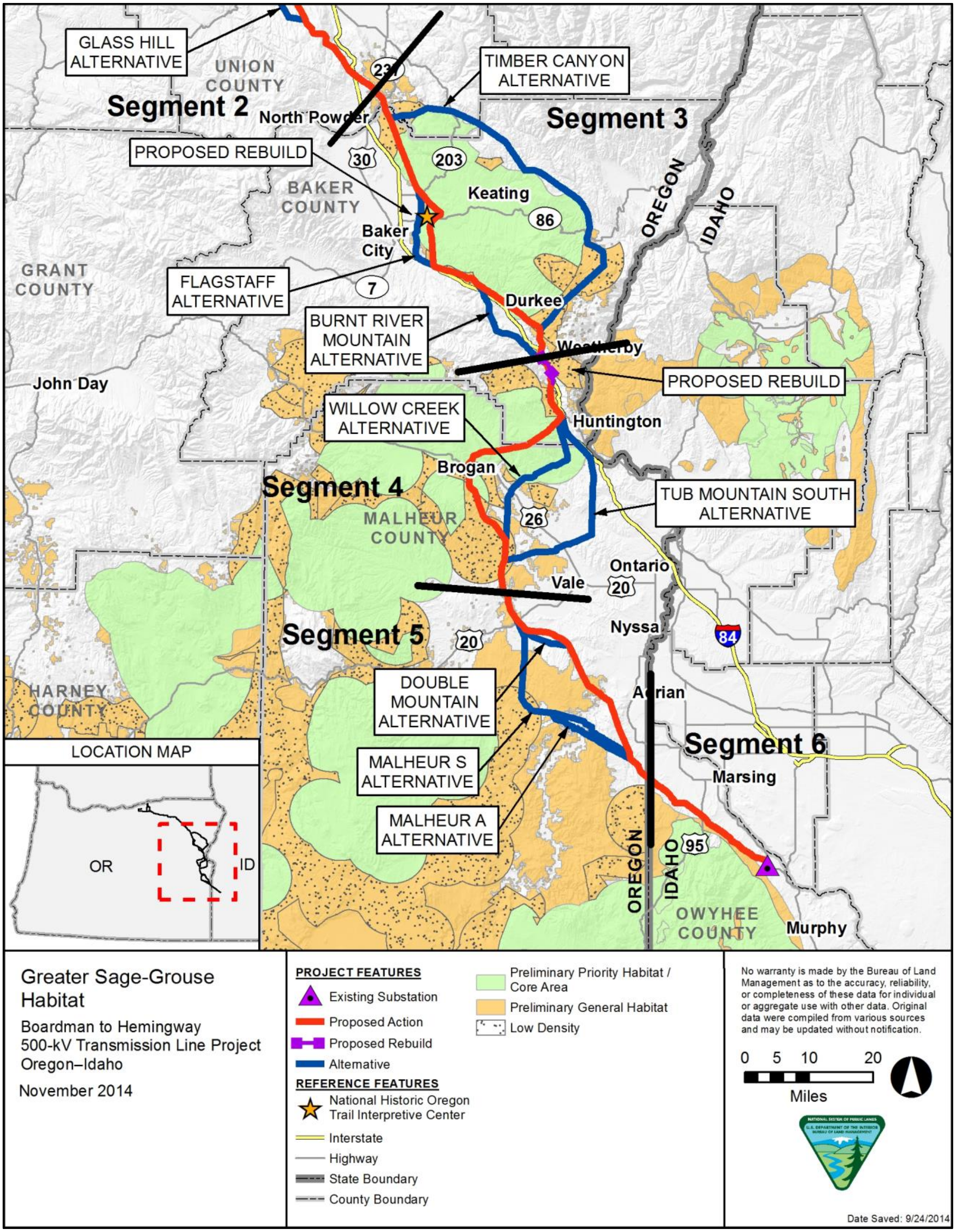


Figure 3-15. Greater Sage-Grouse Habitat

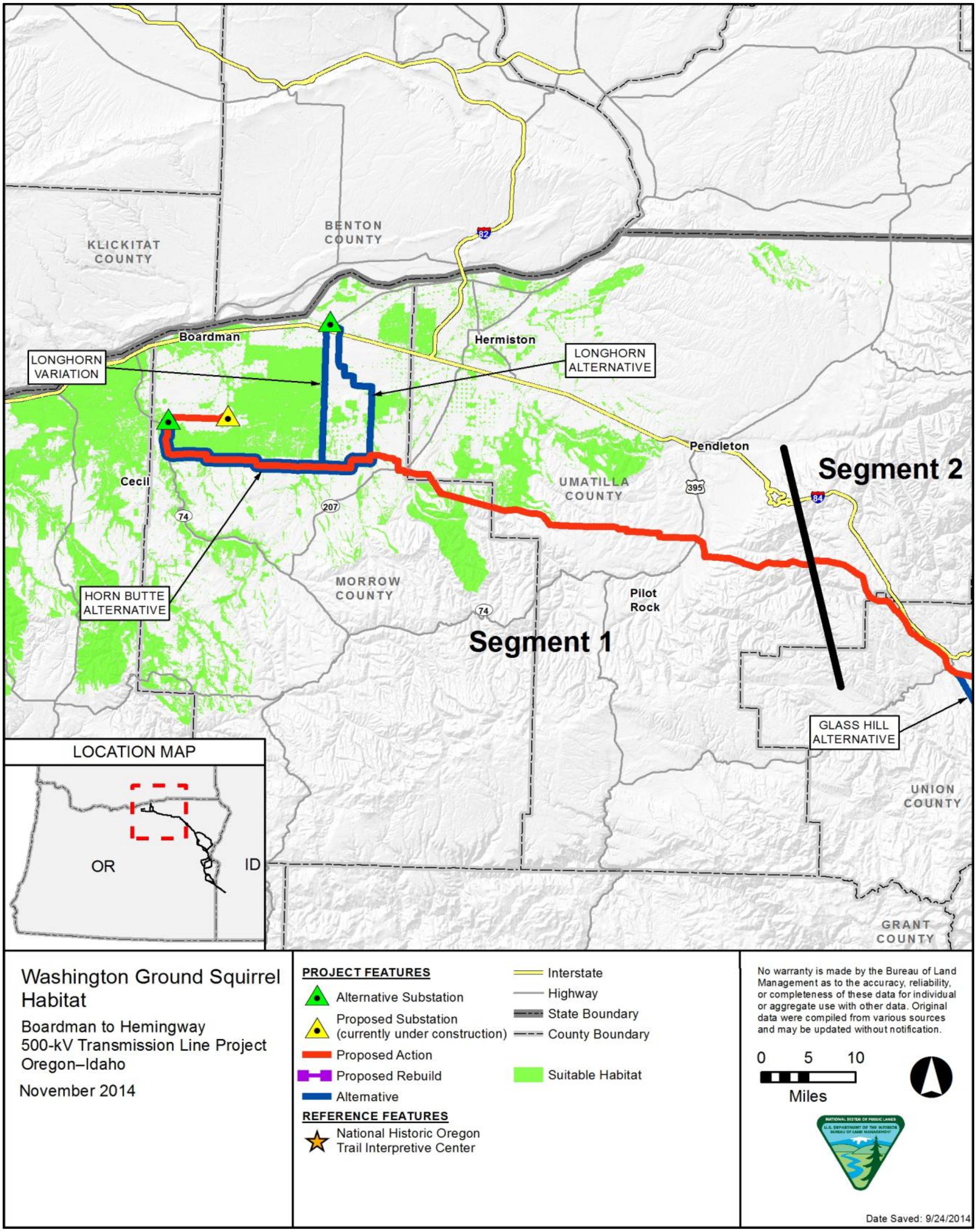


Figure 3-16. Washington Ground Squirrel Habitat

Occurrence in the Analysis Area

Estimates for suitable habitat within the analysis area are based upon gross acres (associated with existing mapping) within 5 miles of the centerline of the proposed transmission line(s) (Table 3-56). Right-of-way estimates include all acreages with suitable habitat within the 250 foot right-of-way, 125 feet on each side of the centerline. Suitable habitat (including primary and secondary) within the analysis area consists of shrub-steppe and grassland habitat located in Segment 1of the Project area, all alternatives have relatively high percentages (18–35 percent) of suitable habitat within the right-of-way corridor (Table 3-56, Figure 3-16).

Table 3-56. Existing Washingon Ground Squirrel Habitat Located in the Analysis Area

Proposed Action/Alternative (Segment 1)	Total Miles—Transmission Line (miles)	Suitable Habitat within Analysis Area (acres)	Habitat within Right-of-Way (acres)
Proposed Alternative	86.9	122,323	2632 (21.7 percent)
Horn Butte Alternative	80.3	110,936	2437 (18.3 percent)
Longhorn Alternative	71.2	72,999	2157 (18.0 percent)
Longhorn Variation	75.2	92,327	2275 (34.9 percent)

SPECIAL STATUS SPECIES

There are 64 animal species listed as sensitive by the BLM or USFS, or threatened and endangered by the State of Oregon that potentially could occur within the analysis area (Table 3-54 and Table 3-57). The USFS sensitive species list includes animal species for which population viability is a concern on USFS-administered lands. USFS manages sensitive species under policy contained in USFS Manual 2670. The objective of the USFS policy is to maintain viable populations for native and desired non-native wildlife species in habitats distributed throughout their geographic range on USFS lands. BLM sensitive species are managed under the special status species policy contained in BLM Manual 6840. The objectives of the BLM special status species policy are to (1) conserve and/or recover ESA-listed species and the ecosystems on which they depend so ESA protections are no longer needed for these species and (2) to initiate proactive conservation measures that reduce or eliminate threats to BLM sensitive species and minimize the likelihood of and the need for listing these species under the ESA. The Proposed Action and Alternatives extend northwest from southwest Idaho to northeast Oregon across mostly shrubland habitat types. This section describes the affected environment for special status wildlife species that are known to be present, or have suitable habitat, in the project area.

Table 3-57 identifies those special status wildlife species with documented occurence or potential habitat within the analysis area, by analysis segment. For reference, Figure 3-7 in the Vegetation section (Section 3.2.3) illustrates the broad distribution of vegetation communities (i.e., wildlife habitats) in the analysis area. Detailed discussions for special status species and their habitats are presented in the Affected Environment section by Segment.

Table 3-57. Special Status Species with Documented Occurrence or Potential Habitat in the Analysis Area

Species	Status [1]	Primary Wildlife Habitat Type	Occurrence Potential by Segment					
			1	2	3	4	5	6
Amphibians								
Columbia spotted frog *(Rana luteiventris)* Great Basin DPS	USFWS C, ID BLM S, OR BLM S, SV	Wetland/Riparian/Open Water	N	N	N	M	M	M
Columbia spotted frog *(Rana luteiventris)* population outside Great Basin DPS	USFS S	Wetland/Riparian/Open Water	M	M	M	M	N	N
Northern leopard frog *(Lithobates pipiens)*	ID BLM S, OR BLM S	Wetland/Riparian/Open Water	M	M	M	K	M	M
Rocky mountain tailed frog *(Ascaphus montanus)*	OR BLM S, USFS S, SV	Wetland/Riparian/Open Water	N	M	N	N	N	—
Western toad *(Bufo boreas)* Northern Rocky Mountain population only	ID BLM S	Wetland/Riparian/Open Water, Forest/Woodland	—	—	—	—	—	M
Woodhouse's toad (*Anaxyrus woodhousii*) (*Anaxyrus woodhousii woodhouse – Idaho)*	ID BLM S, OR BLM S	Wetland/Riparian/Open Water	M	M	M	M	M	M
Reptiles								
Common garter snake (*Thamnophis sirtalis*)	ID BLM S	Wetland/Riparian/Open Water, Forest/Woodland, Grassland	—	—	—	—	—	M
Longnose snake (*Rhinocheilus lecontei*)	ID BLM S	Bare Ground/Cliffs/Talus, Shrubland	—	—	—	—	—	M
Mojave black-collared lizard (*Crotaphytus bicinctores*)	ID BLM S	Bare Ground/Cliffs/Talus, Shrubland	—	—	—	—	—	K
Western ground snake (*Sonora semiannulata*)	ID BLM S	Bare Ground/Cliffs/Talus, Shrubland	—	—	—	—	—	K

Species	Status [1]	Primary Wildlife Habitat Type	Occurrence Potential by Segment					
			1	2	3	4	5	6
Birds								
American peregrine falcon (*Falco peregrinus anatum*)	ID BLM S, OR BLM S, USFS S, SV	Bare Ground/Cliffs/Talus, Forest/Woodland, Wetland/Riparian/Open Water, Developed/Disturbed	M	K	K	M	M	M
American three-toed woodpecker (*Picoides dorsalis*)	SV	Forest/Woodland	N	K	K	N	N	—
American white pelican *(Pelecanus erythrorhynchos)*	OR BLM S, SV	Wetland/Riparian/Open Water	M	M	M	M	M	M
Bald eagle *(Haliaeetus leucocephalus)*	ID BLM S, OR BLM S, USFS S, ST	Forest/Woodland, Developed/Disturbed	M	M	M	M	M	M
Black-backed woodpecker (*Picoides arcticus*)	SV	Forest/Woodland	M	M	K	M	M	—
Black-throated sparrow (*Amphispiza bilineata*)	ID BLM S	Shrubland	—	—	—	—	—	K
Bobolink (*Dolichonyx oryzivorus*)	OR BLM S, SV	Grassland, Shrubland	K	M	M	K	M	—
Brewer's sparrow (*Spizella breweri*)	ID BLM S	Shrubland	—	—	—	—	—	K
Common nighthawk (*Chordeiles minor*)	SC	Grassland, Shrubland, Forest/Woodland	K	K	K	K	K	—
Ferruginous hawk *(Buteo regalis)*	ID BLM S	Wetland/Riparian/Open Water, Grassland, Bare Ground/Cliffs/Talus	—	—	—	—	—	K
Flammulated owl (*Otus flammeolus*)	SV	Forest/Woodland	N	M	M	N	N	N
Golden eagle (*Aquila chrysaetos*)	BGEPA	Shrubland, Bare Ground/Cliffs/Talus, Grassland	M	K	K	M	K	K
Grasshopper sparrow *(Ammodramus savannarum)*	OR BLM S, SV	Grassland	M	M	M	M	M	—
Great gray owl (*Strix nebulosa*)	SV	Forest/Woodland	N	M	M	N	N	—
Greater sage-grouse (*Centrocercus urophasianus*)	USFWS C, ID BLM S, OR BLM S, USFS S, SV	Shrubland	N	K	K	K	K	K

Species	Status [1]	Primary Wildlife Habitat Type	Occurrence Potential by Segment					
			1	2	3	4	5	6
Greater sandhill crane *(Grus canadensistabida)*	SV	Wetland/Riparian/Open Water, Grassland, Agriculture	M	M	M	M	M	—
Horned grebe *(Podiceps auritus)*	OR BLM S	Wetland/Riparian/Open Water	M	M	M	M	M	—
Lewis's woodpecker (*Melanerpes lewis*)	ID BLM S, OR BLM S, USFS S, CR	Forest/Woodland, Wetland/Riparian/Open Water (Riparian)	M	K	M	M	M	K
Loggerhead shrike *(Lanius ludovicianus)*	ID BLM S	Shrubland, Forest/Woodland	—	—	—	—	—	K
Long-billed curlew (*Numenius americanus*)	SV	Grassland, Wetland/Riparian/Open Water	K	M	M	K	M	—
Mountain quail (*Oreortyx pictus*)	ID BLM S	Shrubland, Forest/Woodland	—	—	—	—	—	N
Olive-sided flycatcher (*Contopus cooperi*)	ID BLM S, SV	Forest/Woodland	N	K	M	N	N	N
Pileated woodpecker (*Dryocopus pileatus*)	SV	Forest/Woodland, Wetland/Riparian/Open Water	N	K	M	N	N	—
Prairie falcon (*Falco mexicanus*)	ID BLM S	Shrubland, Bare Ground/Cliffs/Talus, Grassland	—	—	—	—	—	K
Sage sparrow (*Amphispiza belli*)	ID BLM S	Shrubland	—	—	—	—	—	K
Swainson's hawk (*Buteo swainsoni*)	SV	Grassland, Shrubland, Agriculture	K	K	K	K	K	—
Upland sandpiper (*Bartramia longicauda*)	USFS S, CR	Grassland, Agriculture	N	M	M	N	N	—
Western burrowing owl (*Athene cunicularia*)	SV	Grassland, Shrubland	K	M	M	M	K	—
White-faced ibis (*Plegadis chihi*)	ID BLM S	Wetland/Riparian/Open Water, Shrublands	—	—	—	—	—	M
White-headed woodpecker (*Picoides albolarvatus*)	OR BLM S, USFS S, CR	Forest/Woodland	N	M	M	N	N	—
Willow flycatcher *(Empidonax trailii)*	ID BLM S	Wetland/Riparian/Open Water	—	—	—	—	—	M

Species	Status [1]	Primary Wildlife Habitat Type	Occurrence Potential by Segment					
			1	2	3	4	5	6
Mammals								
American marten (*Martes americana*)	SV	Forest/Woodland	N	K	M	N	N	—
California bighorn sheep (*Ovis Canadensis californiana*)	ID BLM S	Bare Ground/Cliffs/Talus, Shrubland	—	—	—	—	—	K
Fringed Myotis (*Myotis thysanodes*)	ID BLM S, OR BLM S, USFS S, SV	Shrubland, Grassland, Forest/Woodland	N	M	M	N	N	M
Gray wolf (*Canis lupus*)	USFWS DL, OR BLM S, USFS S, SE	Forest/Woodland (habitat generalist)	M	K	K	M	M	M
Long-legged myotis (*Myotis volans*)	SV	Forest/Woodland	N	K	K	N	N	—
Merriam's ground squirrel (*Spermophilus canus vigilis*)	ID BLM S	Shrubland	—	—	—	—	—	K
North American wolverine (*Gulo gulo luscus*)	OR BLM S, USFS S, ST	Forest/Woodland	N	M	M	N	N	—
Pallid bat (*Antrozous pallidus*)	OR BLM S, SV	Shrubland, Grassland, Bare Ground/Cliffs/Talus	K	M	L	K	M	—
Pygmy rabbit (*Brachylagus idahoensis*)	ID BLM S, OR BLM S	Shrubland	N	N	M	M	K	M
Spotted bat (*Euderma maculatum*)	ID BLM S, OR BLM S, USFS S, SV	Shrublands, Bare Ground/Cliffs/Talus, Forest/Woodland	M	M	M	M	M	M
Townsend's big-eared bat (*Corynorhinus townsendii*)	ID BLM S, OR BLM S, USFS S	Shrublands, Forest/Woodland, Bare Ground/Cliffs/Talus	M	K	K	M	M	M
Washington groundsquirrel (*Spermophilus washingtoni*)	USFWS C, OR BLM S, SE	Grassland, Shrubland	K	N	N	N	N	—
White-tailed jackrabbit (*Lepus townsendii*)	SV	Shrubland, Grassland	M	M	K	M	K	—

Species	Status [1]	Primary Wildlife Habitat Type	Occurrence Potential by Segment					
			1	2	3	4	5	6
Invertebrates								
Crooked Creek springsnail (*Pyrgulopsis intermedia*)	OR BLM S	Wetland/Riparian/Open Water	N	N	N	N	M	—
Fir pinwheel (*Radiodiscus abietum*)	USFS S	Forest/Woodland	N	M	N	N	N	—
Hells Canyon land snail *(Cryptoma stixpopuli)*	OR BLM S, USFS	Wetland/Riparian/Open Water	N	M	N	N	N	—
Intermountain sulphur *(Coliaschristina pseudochristina)*	OR BLM S, USFS	Forest/Woodland	N	M	M	N	N	—
Jackson Lake springsnail *(Pyrgulopsis robusta)*	OR BLM S	Wetland/Riparian/Open Water	M	N	N	N	N	—
Johnson's hairstreak (*Callophrys johnsoni*)	USFS S	Forest/Woodland	—	K	K	—	—	—
Owyhee springsnail *(Pyrgulopsis owyheensis)*	OR BLM S	Wetland/Riparian/Open Water	—	—	—	—	M	—
Owyhee hot springsnail *(Pyrgulopsis fresti)*	OR BLM S	Wetland/Riparian/Open Water	N	N	N	N	M	—
Silver-bordered fritillary *(Boloria selene)*	OR BLM S, USFS S	Wetland/Riparian/Open Water	N	M	M	N	N	—
Western bumblebee *(Bombus occidentalis)*	USFS S	Grassland	M	M	M	M	M	—
Western ridged mussel (*Gonidea angulata*)	OR BLM S, USFS S	Wetland/Riparian/Open Water	M	M	M	M	M	—

Table Notes: Dashes (—) indicate segments where the species is not categorized as a special status species(no determination of occupancy) [1] Status Designations: USFWS C = Candidate for listing under the Federal Endangered Species Act, ID BLM S = Idaho Bureau of Land Management Sensitive, OR BLM S = Oregon Bureau of Land Management Sensitive, SV = State Vulnerable, USFS S = U.S. Forest Service Sensitive, ST = State Threatened, SC = State Candidate, BGEPA = Bald and Golden Eagle Protection Act, CR = State Critical, USFWS DL = Delisted under the Federal Endangered Species Act, SE = State Endangered. [2] K = Known to occur (documented within the analysis area), L = Likely to occur (documented within project vicinity outside analysis area), M = May occur (not documented in project vicinity but suitable habitat is present in analysis area and the project is within the species' range), N = Does not occur.

MIGRATORY BIRDS INCLUDING RAPTORS

Most bird species in the United States, with the exception of non-migratory upland game species and a few nonnative species such as the house sparrow and European starling, are protected under the federal Migratory Bird Treaty Act of 1918, which prohibits injury or death to migratory birds and their active nests, eggs, and young. Protected migratory birds may be present as year-round residents in the analysis area, and some species may pass through the area during spring and fall migration periods. All birds of prey (raptors) are protected under the Migratory Bird Treaty Act, with bald and golden eagles afforded additional protective measures under the Eagle Act and others receiving additional protection as special status species.

In 2000, the Oregon-Washington Partners in Flight published the Conservation Strategy for Landbirds in the Northern Rocky Mountains of Eastern Oregon and Washington (Altman 2000). This strategy is used to address the requirements contained in Executive Order 13186 (Federal Register 3853, 2001). Many of the birds identified in this plan are also addressed in the USFWS Birds of Conservation Concern (USFWS 2008). The Birds of Conservation Concern identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions for each of the identified bird conservation regions.

For the purposes of migratory bird management, the Birds of Conservation Concern report identifies "Bird Conservation Regions" (BCRs), which are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues; the analysis area for the B2H Project includes portions of BCR 9 (Great Basin) and BCR 10 (Northern Rocky Mountains, U.S. portion only). BCR 9 includes the majority of Segment 1 and Segments 4, 5, and 6, while BCR 10 includes a small portion of Segment 1, 2, and 3. Table 3-58 lists the Birds of Conservation Concern in BCRs 9 and 10 that have potential to occur within the in the analysis area. Many of the species are discussed in other portions of this section and have additional conservation rankings; Brewer's sparrow (ID BLM S), ferruginous hawk (ID BLM S), flammulated owl (ID BLM S, SV), greater sage grouse (Federal Candidate species, ID BLM S, OR BLM S, USFS S, ST), Lewis's woodpecker (ID BLM S, OR BLM S,USFS S, CR), loggerhead shrike (ID BLM S), long-billed curlew (SV), olive-sided flycatcher (ID BLM S, SV), peregrine falcon (American subspecies - ID BLM S, OR BLM S, USFS S, SV), sage sparrow (ID BLM S), Swainson's hawk (SV), upland sandpiper (USFS S, CR), white-headed woodpecker (OR BLM S, USFS S, CR), willow flycatcher (ID BLM S).

There are four designated Audubon Society Important Bird Areas in the vicinity of the B2H Project, although none of these Important Bird Areas are crossed by the Proposed Action or alternatives, some are adjacent to project activities:

- The Boardman Grasslands Important Bird Areas, located in northern Morrow County, which includes the largest remaining single block of predominantly native shrub steppe and grassland habitats in the Columbia Basin.
- The Ladd Marsh Important Bird Areas, located near La Grande, which consists of a group of wetlands, marshes, and prairies totaling over 6,000 acres.

- Snake River Birds of Prey Important Bird Areas, located near Boise, which is 485,832 acres and has one of the densest populations of nesting raptors in North America
- Deer Flat National Wildlife Refuge Important Bird Areas, located near Boise, encompasses two major areas for breeding, wintering, and migrating birds on the Pacific Flyway, particularly waterfowl.

A variety of raptors are known to or are expected to occur in the analysis area. Table 3-59 identifies raptor species, not already identified in Table 3-58 with known occurrence or habitat in the analysis area by segment.

Table 3-58. Birds of Conservation Concern with Habitat in the Analysis Area

Species	Primary Wildlife Habitat Type (Specific Type if applicable)	Species is Included on BCC list for Region		Occurrence Potential by Segment [1]					
		BCR 9	BCR 10	1	2	3	4	5	6
Bald eagle [2]*	Wetland/Riparian/Open Water, Forest/Woodland	X	X	M	M	M	M	M	M
Black rosy-finch	Bare Ground/Cliff/Talus	X	X	N	N	N	M	M	M
Brewer's sparrow*	Shrubland (sagebrush)	X	X	M	M	M	M	M	M
Calliope hummingbird	Forest/Woodland, Wetland/Riparian/Open Water	X	X	M	M	M	M	M	M
Cassin's finch	Forest/Woodland (conifer forest)	—	X	—	M	M	—	—	—
Eared grebe	Wetland/Riparian/Open Water	X [3]	—	N	—	—	M	M	M
Ferruginous hawk*	Grassland, Shrubland, Forest/Woodland (western juniper woodland), Agriculture	X	X	K	M	K	K	K	K
Flammulated owl*	Forest/Woodland (coniferous woodlands and forest edges)	X	X	N	M	M	N	N	N
Golden eagle*	Grassland, Shrubland, Forest/Woodland, Agriculture, Bare ground/Cliffs/Talus	X	—	K	—	—	K	K	K
Greater Sage-Grouse* (Columbia Basin DPS) [4]	Shrubland (sagebrush)	X	—	N	—	—	K	K	K
Green-tailed towhee	Shrubland	X	—	M	—	—	M	M	M
Lewis's woodpecker*	Forest/Woodland, Wetland/Riparian/Open Water (riparian)	X	X	M	M	M	M	M	K
Loggerhead shrike*	Grassland, Shrubland, Forest/Woodland, Agriculture	X	X	M	M	M	M	M	M
Long-billed curlew*	Grassland	X	X	M	M	M	M	M	M
Olive-sided flycatcher*	Forest/Woodland (spruce and fir forests)	—	X	N	M	M	—	—	—
Peregrine falcon [2] *	Forest/Woodland, Bare Ground/Cliff/Talus, Developed/Disturbed	X [3]	X	M	K	K	M	M	M

Species	Primary Wildlife Habitat Type (Specific Type if applicable)	Species is Included on BCC list for Region		Occurrence Potential by Segment [1]					
		BCR 9	BCR 10	1	2	3	4	5	6
Sage sparrow*	Shrubland (sagebrush), Forest/Woodland	X	X	M	M	M	M	M	M
Sage thrasher	Shrubland (sagebrush)	X	X	M	M	M	M	M	M
Swainson's hawk*	Grassland, Shrubland,, Agriculture	—	X	K	K	K	—	—	—
Upland sandpiper*	Grassland	—	X	N	M	M	—	—	—
White-headed woodpecker	Forest/Woodland (ponderosa pine, subalpine fir)	X	X	N	M	M	N	N	N
Williamson's sapsucker	Forest/Woodland	X	X	N	M	M	N	N	N
Willow flycatcher [5] *	Wetland/Riparian/Open Water (riparian)	X	X	M	M	M	M	M	

Table Notes: Throughout table, "—"indicates a segment in which the species is not on the BCC list for that region. * = Species with additional conservation rankings. [1] K = Known to occur (documented within the analysis area), L = Likely to occur (documented within project vicinity outside analysis area), M = May occur (not documented in project vicinity but suitable habitat is present in analysis area and the project is within the species' range), N = Does not occur. [2] Species is ESA delisted. [3] Non-breeding in this Bird Conservation Region. [4] Greater Sage-Grouse is addressed in greater detail in the Federally Listed and Candidate Species section of this DEIS. [5] Non-listed subspecies or population of threatened or endangered species. Riparian habitat for this species is limited throughout the Analysis Area.

Table 3-59. Additional Raptor Species with Known Occurrence or Habitat in the Analysis Area

Species	Primary Wildlife Habitat Type	Occurrence Potential By Segment [1]					
		1	2	3	4	5	6
American kestrel	Grassland, Shrubland, Forest/Woodland, Agriculture	K	K	K	M	M	K
Barn owl	Grassland, Shrubland (Shrub-steppe with big sage and Shrub-steppe without big sage), Agriculture	M	K	K	K	M	M
Burrowing owl	Grassland, Shrubland, Agriculture	K	M	M	K	M	K
Coopers hawk	Forest/Woodland (Western Juniper Woodland)	M	M	M	M	M	K
Great gray owl	Forest/Woodland	N	M	M	N	N	N
Great horned owl	Forest/Woodland (western juniper woodland)	M	M	K	M	M	M
Long-eared owl	Grassland, Shrubland, Agriculture	M	M	M	M	M	M
Northern goshawk	Forest/Woodland (coniferous forest)	N	K	K	N	N	N
Northern harrier	Grassland, Shrubland, Wetland/Riparian/Open Water (wetland), Agriculture	M	M	K	M	M	K
Northern saw-whet owl	Shrubland, Forest/woodland (coniferous woodland)	M	M	M	M	M	M
Osprey	Wetland/Riparian/Open Water	M	M	K	M	M	M
Prairie falcon	Grassland, Shrubland, Agriculture	K	K	K	M	M	K

Species	Primary Wildlife Habitat Type	Occurrence Potential By Segment [1]					
		1	2	3	4	5	6
Red-tailed hawk	Grassland, Shrubland, Forest/Woodland (Western Juniper Woodland), Agriculture	K	K	K	K	K	K
Sharp-shinned hawk	Forest/Woodland	M	K	K	M	M	K
Short-eared owl	Grassland, Shrubland	K	M	M	M	M	K
Western screech owl	Forest/Woodland (Western Juniper Woodland), Wetland/Riparian/Open Water (riparian)	M	M	M	M	M	K

USFS Management Indicator Species

The Wallowa-Whitman LRMP (USFS 1990) identifies five wildlife species, or groups of species, as management indicator species (MIS). These species are identified because of their special habitat needs that may be influenced significantly by planned management activities, and as a result their populations can be used to indicate the health of a specific type of habitat, described as a potential vegetation group. Potential vegetation groups are vegetated landscapes that share similar environmental characteristics, site productivity, and disturbance regimes. These groupings simplify the description of vegetative conditions for use at the broad scale. The five wildlife species or groups of species identified as MIS for the Wallowa-Whitman National Forest include the American marten, northern goshawk, pileated woodpecker, primary cavity excavators, and Rocky Mountain elk.

There are two alternatives on the Wallowa-Whitman National Forest and five watersheds in the analysis area that may be affected. The Proposed Action is in the Beaver Creek-Grande Ronde and Five Points-Grande Ronde watersheds, while the Timber Canyon Alternative is in the Big Creek, Eagle Creek, and Ruckles Creek-Powder River watersheds (Segments 2 and 3, respectively) (Appendix F).

Methodology

Each watershed within the Wallowa-Whitman National Forest was analyzed to determine the amount of suitable habitat within the watershed and the amount of source habitat, which is habitat that is capable of supporting a stable or increasing population of MIS that is present within the analysis area. Source habitat for American marten, Northern goshawk, and pileated woodpecker was determined from analyses of existing data such as; potential vegetation groups, percent canopy closure, number, type and location of trees, and the diameter of conifer trees at breast height (4.5 feet above ground level) Project related habitat maps for each of the three main species are provided in Appendix F.

Suitable habitat for primary cavity excavators was determined through use of the Decayed Wood Advisory model. The Decayed Wood Advisory model (Mellen et al. 2006) is an internet-based computer program developed as a tool to help federal land managers evaluate effects of management activities on wildlife species that use dead wood habitats (primary cavity excavators), and is used primarily to compare existing and projected snag levels to wildlife use levels (tolerance levels). The Wallowa-Whitman National Forest LRMP states that due to “relatively short timber rotation periods, snags larger than 21 inches in diameter will be rare in managed stands. Snags 12 to 18 inches in diameter will usually exceed 40 percent of optimum habitat levels for cavity nesters through natural mortality in managed stands".

The Wallowa-Whitman National Forest LRMP has established standards for elk habitat on the USFS-manaded land. These standards are analyzed using a habitat effectiveness model which returns a Habitat Effectiveness Index (HEI) to assess the quality of elk habitat (Thomas et al. 1988). The HEI evaluates size and spacing of cover and forage areas, density of open roads, quantity and quality of forage available to elk and cover quality. Forage data is unavailable and is not included in the total HEI value. HEI was analyzed for the Proposed Action which includes portions of the Beaver Creek, Grande Ronde and Five Points Grande Ronde watersheds, and for the Timber Canyon Alternative which includes portions of the Big Creek, Eagle Creek, and Ruckles Creek-Powder River watersheds.

Existing Condition (Affected Environment)

The following existing condition discussion focuses solely on the Existing Condition Affected Environment for activities proposed on USFS-managed lands. The discussion is tiered to include wildlife analysis requirements specific to the Wallow-Whitman LRMP. Project activities are proposed in Segments 2 and 3 of the analysis area.

American Marten

The range of the American marten extends across Alaska and Canada, the Great Lakes area, the Rocky Mountains and west coast ranges south to central California. In Oregon, they are found in the Coast Range, the Cascade Crest, and the Blue Mountains (Verts and Carraway 1998). On the Wallowa-Whitman National Forest, the Five Points-Grande Ronde Watershed is estimated to contain approximately 3.63 square miles of source habitat for American marten. The marten is strongly associated with mature or late-successional mesic to dry conifer forests that contain coarse woody debris, have multi-storied canopy with a closure of at least 60 percent, and are adjacent to riparian areas (Vasquez and Spicer 2005). On the Wallowa-Whitman, source habitat is described as cold moist and cold dry potential vegetation group (mixed conifer), with canopy closure of at least 60 percent and comprised of multi-storied canopy with tree sizes of at least a 20-inch diameter measured at breast height (dbh) (Wales et al. 2011). Martens are highly sensitive to forest fragmentation and generally avoid areas containing greater than 25 percent non-forested lands. Overall, suitable source habitat for marten in the general project area is highly limited. Existing habitat, as described in Table 3-58, would be expected to be classified as dispersal habitat only.

Northern Goshawk

Northern goshawks can be found throughout Canada and Alaska excluding the very far north, throughout the western U.S. excluding southern California, and the northern edge of the continental U.S. and from the Dakotas east to Pennsylvania and Maine (Squires and Reynolds 1997).

This forest raptor is a habitat generalist and can be found in both coniferous and deciduous forests, woodlands, or along treelines adjacent to open habitats. Breeding habitat consists of mature, typically multi-strata, forest habitats. Source habitat for northern goshawk on the Wallowa-Whitman National

Forest is defined as dry ponderosa pine, dry Douglas fir, dry grand fir, and cool moist and cold dry potential vegetation group. Source habitat is further defined as having a tree canopy closure of at least 40 percent in dry ponderosa pine, dry Douglas fir, and dry grand fir and at least 60 percent in cool moist and cold dry potential natural vegetation, consisting of single and multi-story canopy layers with standard dbhs of at least 15 inches (Wales et al. 2011).

Suitable source habitat, including existing breeding territories, is present for northern goshawks in the Beaver Creek–Grande Ronde, Five Points-Grande Ronde, and Eagle Creek (Proposed Action and Timber Canyon Alternatives) watersheds (Table 3-58). Suitable foraging habitat also exists.

Pileated Woodpecker

The range of the pileated woodpecker extends from the west coast of North America from central California, north to central British Columbia, east across central Canada and the northern Rocky Mountains, and includes most of the eastern U.S. (Bull and Jackson 2011). Pileated woodpeckers are resident species and are considered a keystone habitat modifier in the Pacific Northwest (Bull and Jackson 2011).

Pileated woodpeckers in eastern Oregon are strongly associated with unlogged stands of old-growth grand fir with closed canopies and, in some cases, open stands with high densities of large snags and logs. Source habitat for this species on the Wallowa-Whitman is composed of dry Douglas fir, dry grand fir, cool moist and cold dry potential natural vegetation with canopy closure of at least 40 percent in the dry Douglas and grand fir groups and at least 60 percent in the cool moist and cold dry vegetation groups. Canopy layers consist of both single and multi-story layers, with trees of least 20 inch dbh (Wales et al. 2011).

The main threat to this species is habitat loss, primarily through timber harvest. Timber harvest impacts this species by decreasing the seral stage of forested habitat and removing mature trees, snags, and large down wood, eliminating both nesting substrate and foraging areas that this species requires (Bull 2003; NatureServe 2010). Furthermore, elimination of pileated woodpeckers from an area in turn impacts secondary cavity-nesting species that depend on the nest holes that pileated woodpeckers excavate. (Wales et al. 2011)

Although suitable source habitat exists for pileated woodpeckers in the Beaver Creek–Grande Ronde, Five Points–Grande Ronde and Eagle Creek watersheds it is limited in the general Project area. Suitable foraging habitat does exist.

Primary Cavity Excavators

Primary cavity nesters depend heavily upon disturbance factors which result in dead and/or hollow trees, such as insects, disease, and fire. They are considered “keystone species” because of the role that they play in providing a variety of habitat for many other species. Primary cavity excavators (birds) are best represented by different types of woodpeckers that utilize dead wood extensively. These species excavate hollow cavities in trees usually in dead and decayed wood, for nesting and foraging. The cavities, in turn, are also critical to the survival of secondary cavity users, which include a variety of other wildlife species. Snags provide essential habitat for approximately one quarter of all breeding birds in western coniferous forests and secondary cavity users (i.e. mountain bluebirds, small owls, flying squirrels) depend on and use cavities excavated by primary excavating species. Several local cavity-nesting bird species, including white-headed and Lewis's woodpeckers, are considered high conservation priorities resulting from local and/or regional population declines.

Suitable primary (source) and secondary habitat exists for several primary cavity excavators in all of the affected watersheds. See Table 3-60 and Table 3-61 for more detailed information.

Table 3-60. Habitat Suitability for MIS within the Proposed Action Analysis Area

	Beaver Creek- Grande Ronde Watershed			Five Points - Grande Ronde Watershed		
Species	**Supports a Population**	**Existing Suitable Habitat**	**Comments**	**Supports a Population**	**Existing Suitable Habitat**	**Comments**
American Marten Martes Americana	No		Lacks the acres of cold/moist multi-story old growth to support a population of marten.	Yes	2,322 acres of identified source habitat	The upper portion of the Five Points watershed is more remote with lower road densities and contains more cold-upland habitat. The combination of warm, dry forest types, early seral stages, and high levels of disturbance and fragmentation in the area surrounding the utility corridor makes this area unlikely to support a population of marten (Trail 2012).
Northern Goshawk Accipeter gentilis	Yes	7,956 acres of identified source habitat	Source habitat not intersected by utility line.	Yes	9,058 acres of identified source habitat	Source habitat would be intersected by utility corridor. Removing canopy cover and large trees would affect nesting success. If nests are found, timing restrictions would apply.
Pileated Woodpecker Drycopis pileatus	Yes	3,266 acres of source habitat	Removing large snags would affect foraging and nesting habitat	Yes	2,910 acres of identified source habitat	Ground reconnaissance shows habitat more abundant than indicated by the model (Trail 2012). Removing large snags would affect foraging and nesting habitat.

	Beaver Creek- Grande Ronde Watershed			Five Points - Grande Ronde Watershed		
Species	**Supports a Population**	**Existing Suitable Habitat**	**Comments**	**Supports a Population**	**Existing Suitable Habitat**	**Comments**
Primary Cavity Excavators	Yes	Conifer forest habitat including Douglas-fir, ponderosa pine, and lodge pole pine, with large diameter snags is found in this watershed.	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (>21 in dbh) are limited.	Yes	Predominantly conifer forest habitat including Douglas-fir, ponderosa pine, with large diameter snags is found in this watershed.	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (>21 in dbh) are limited (Trail 2012).

Table 3-61. Habitat Suitability for MIS in the Timber Canyon Alternative Analysis Area

	Big Creek Watershed			Eagle Creek Watershed			Powder River Watershed		
Species	**Supports Population**	**Existing Suitable Habitat**	**Comments**	**Supports Population**	**Existing Suitable Habitat**	**Comments**	**Supports Population**	**Existing Suitable Habitat**	**Comments**
American Marten Martes Americana	No		Lacks the acres of cold/moist multi-story old growth to support a population of marten.	Yes	10,367 acres of identified source habitat	This watershed contains marten habitat in the northern half, however the area where the alternative is located, is mostly dry and lacks the structure needed by marten.	No		Lacks the acres of cold/moist multi-story old growth to support a population of marten.
Northern Goshawk Accipeter gentilis	Yes	6,013 acres of identified source habitat	If nests are found within a 30 acre buffer, timing restrictions would apply	Yes	18,569 acres of identified source habit	If nests are found within a 30 acre buffer, timing restrictions would apply	Yes	7,956 acres of identified source habitat	If nests are found within a 30 acre buffer, timing restrictions would apply

	Big Creek Watershed			Eagle Creek Watershed			Powder River Watershed		
Species	**Supports Population**	**Existing Suitable Habitat**	**Comments**	**Supports Population**	**Existing Suitable Habitat**	**Comments**	**Supports Population**	**Existing Suitable Habitat**	**Comments**
Pileated Woodpecker Drycopis pileatus	No		Lacks enough snags > 20 dbh" to support a population pileated woodpeckers	Yes	2,910 acres of identified source habitat	Removing large snags would affect foraging and nesting habitat	No		Lacks enough snags > 20 dbh" to support a population pileated woodpeckers
Primary Cavity Excavators	Yes	Conifer forest habitat with large diameter snags is found in this watershed	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (>21 in dbh) are limited	Yes	Conifer forest habitat including Douglas-fir, ponderosa pine, and lodge pole pine, with large diameter snags	Snag densities vary within the watershed, but generally fall within the 30% tolerance level (Snow Basin 2012).	Yes	Conifer forest habitat with large diameter snags is found in this watershed	Snag densities vary within the watershed but generally fall within the 30% tolerance level (Snow Basin 2012).

Rocky Mountain Elk

Elk occur throughout most of North America. The Rocky Mountain subspecies is found throughout the western U.S. except along the Pacific coast, and has also been introduced in many areas in North America. Elk can be found in numerous habitat types ranging from grasslands, shrublands, woodlands, and forested habitat types (Johnson and O'Neil 2001).

On the Wallowa-Whitman NF there is no numerical standard for elk habitat in the LRMP, but it states "to provide near-optimum cover and forage conditions for big game" (USFS 1990 page 4-60). The LRMP also states that "vegetation manipulation which converts a site from satisfactory or marginal cover to a forage status will be designed that at least 80 percent of the treated area that converts cover to forage is to be within 600 feet of a satisfactory cover patch at least 6 acres in size and within 900 feet of a satisfactory cover patch at least 40 acres in size in summer range. On winter range at least 80 percent of the treated area is within 600 feet of a satisfactory cover patch at least 40 acres in size. Within the Wallowa-Whitman NF, over 4.3 square miles of forest and woodland vegetation groups occur within one-half mile of the Proposed Action.

The Wallowa-Whitman Nation Forest ran a HEI analysis for the watersheds affected on the USFS lands. In order to show maximum potential disturbance, HEI analysis considers access and construction roads as 'open' roads HEI estimates do not include forage assessments.

In the analysis area for the Proposed Action, there is elk habitat in the Five Points-Grande Ronde and Beaver Creek-Grande Ronde watersheds. In these watersheds, the analysis calculated a current HEI cover value of 0.69, a HEI size and spacing value of 0.75, a HEI value for road density of 0.54 with a total HEI value for the watersheds affected by the Proposed Action to be 0.66. An optimal value for cover, size and spacing and road density is 1.0. The LRMP suggests a HEI value of at least 0.74 for Management Area-3 (USFS 1990 p.4-63) (Appendix F).

In the analysis area for the Timber Canyon Alternative, there is elk habitat in the Big Creek, Eagle Creek, and Ruckles Creek-Powder River watersheds. In these watersheds, the analysis calculated a current HEI cover value of 0.68, a HEI size and spacing value of 0.60, a HEI value for road density of 0.54 with a total HEI value for the watersheds affected by the Proposed Action to be 0.60. As previously stated, an optimal value for cover, size and spacing and road density is 1.0, and the LRMP suggests a HEI value of at least 0.74 for Management Area-3 (USFS 1990 p4-63) (Appendix F).

BIG GAME

Common big game species that occur in the analysis area include pronghorn, elk, and mule deer; less common big game species include bighorn sheep, moose, and white-tailed deer. Non-forest habitats provide the majority of the forage for big game, while forested habitats provide hiding and thermal cover. Some portions of the analysis area are used year-round by these species; however, some areas are used specifically as seasonal ranges. The analysis area contains seasonal habitats (i.e., summer and winter ranges) that have been designated by the ODFW, IDFG, and USFS for elk (Figure 3-18), mule deer (Figure 3-19), bighorn sheep (Figure 3-20), and pronghorn (Figure 3-21). Big game habitat conditions differ across the analysis area. Existing roads at varying densities occur throughout the majority of big game seasonal ranges that intersect the analysis area. Although all seasonal ranges are important for the general fitness of big game populations, ODFW, IDFG, BLM, and USFS place management emphasis on seasonal ranges (i.e., winter range) that limit populations or provide unique habitat and terrain that is suitable for occupancy (i.e., bighorn sheep). In addition, both Oregon (ODFW) and Idaho (IDFG) manage for big game (elk and deer) by designated hunting / management units. Existing Management Units, and their relation to the analysis area, is displayed in Figure 3-17.

For most big game species, state management focuses heavily on winter range. Table 3-62 identifies the managed big game habitat types found in the project area, and indicates the project segments in which habitat is designated.

Table 3-62. Existing Big Game Habitat in the Analysis Area

Species	Occurrence Potential by Segment [1]					
	1	2	3	4	5	6
Elk Winter Range	X	X	X	X	—	—
Mule Deer Winter Range	X	X	X	X	X	X
Occupied Bighorn Sheep Habitat (Oregon)	—	—	X	—	—	—
Bighorn Sheep Population Management Units (Idaho)	—	—	—	—	—	X
Pronghorn Winter Range	—	—	—	X	X	X

Table Notes: [1] X = Designated habitat is present; Dash (—) = No designated habitat.

TRIBAL WILDLIFE CONCERNS

In the issues identified for analysis, tribal concerns include potential impacts to Greater Sage-Grouse, golden eagles, and big game. These resources are included below in discussions for the appropriate resources. Exercise of treaty rights could include, but is not limited to, hunting of small and large game for economic, religious, and cultural use. Project impacts to wildlife have the potential to effect tribal exercise of these rights.

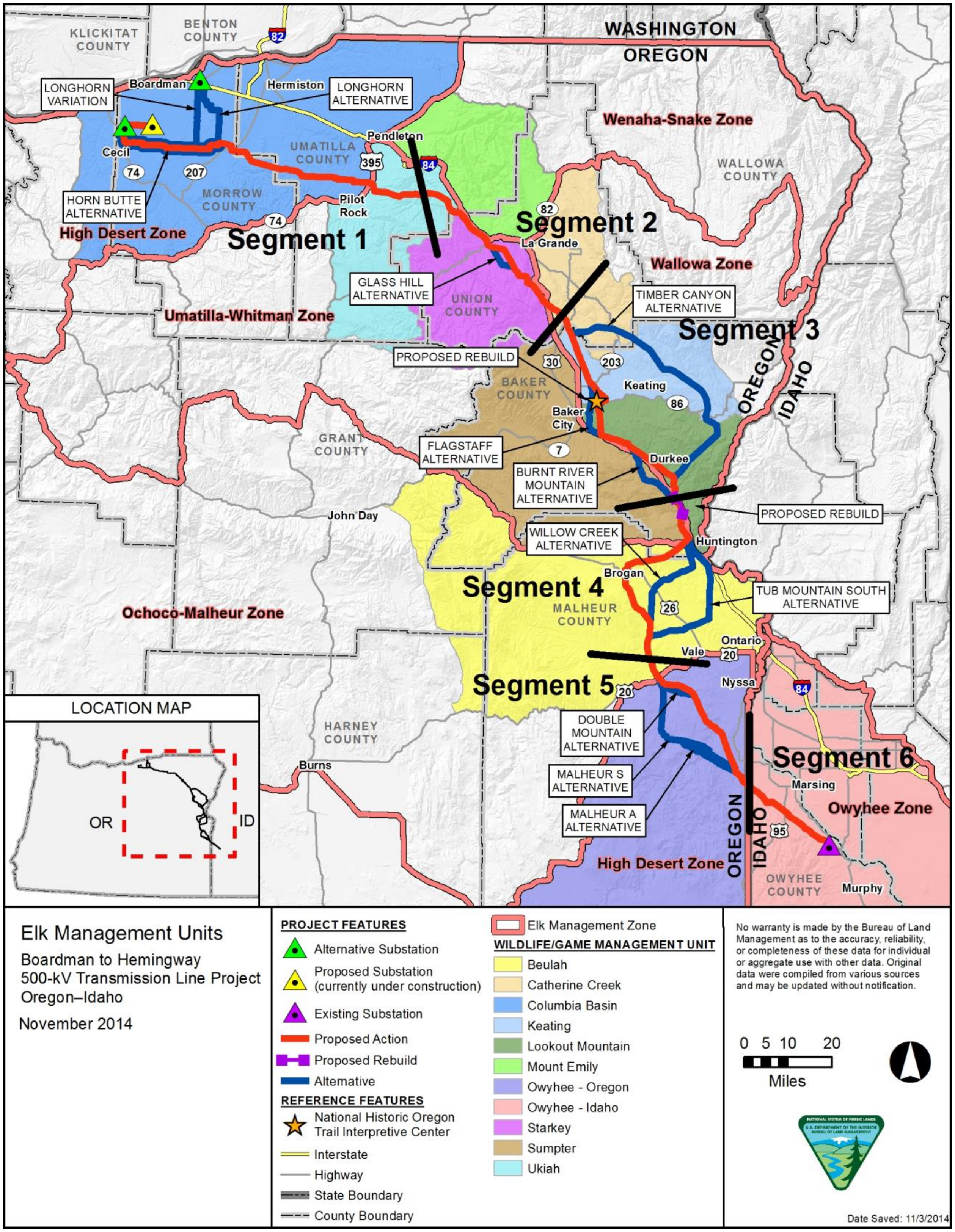


Figure 3-17. Elk Management Units

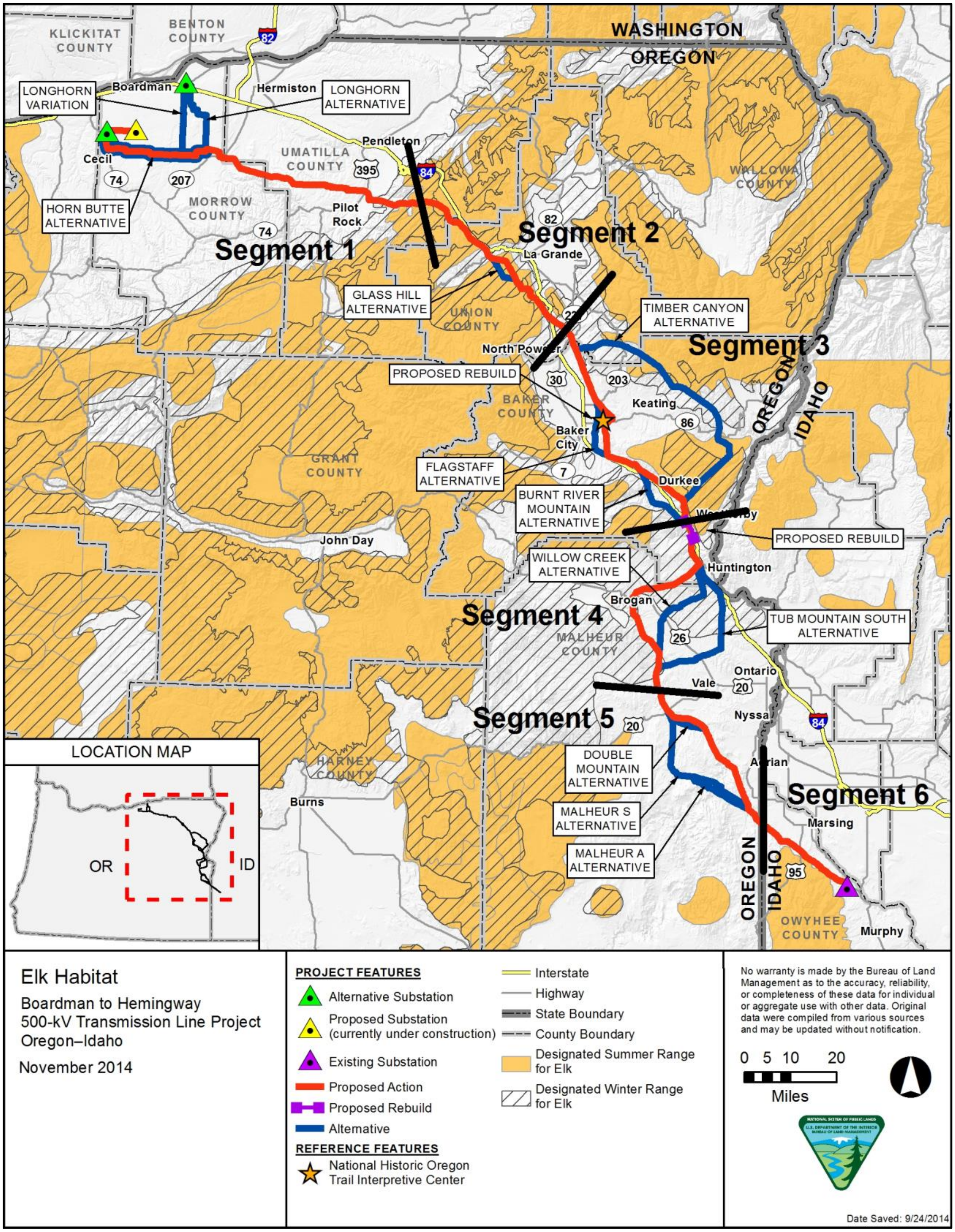


Figure 3-18. Elk Habitat

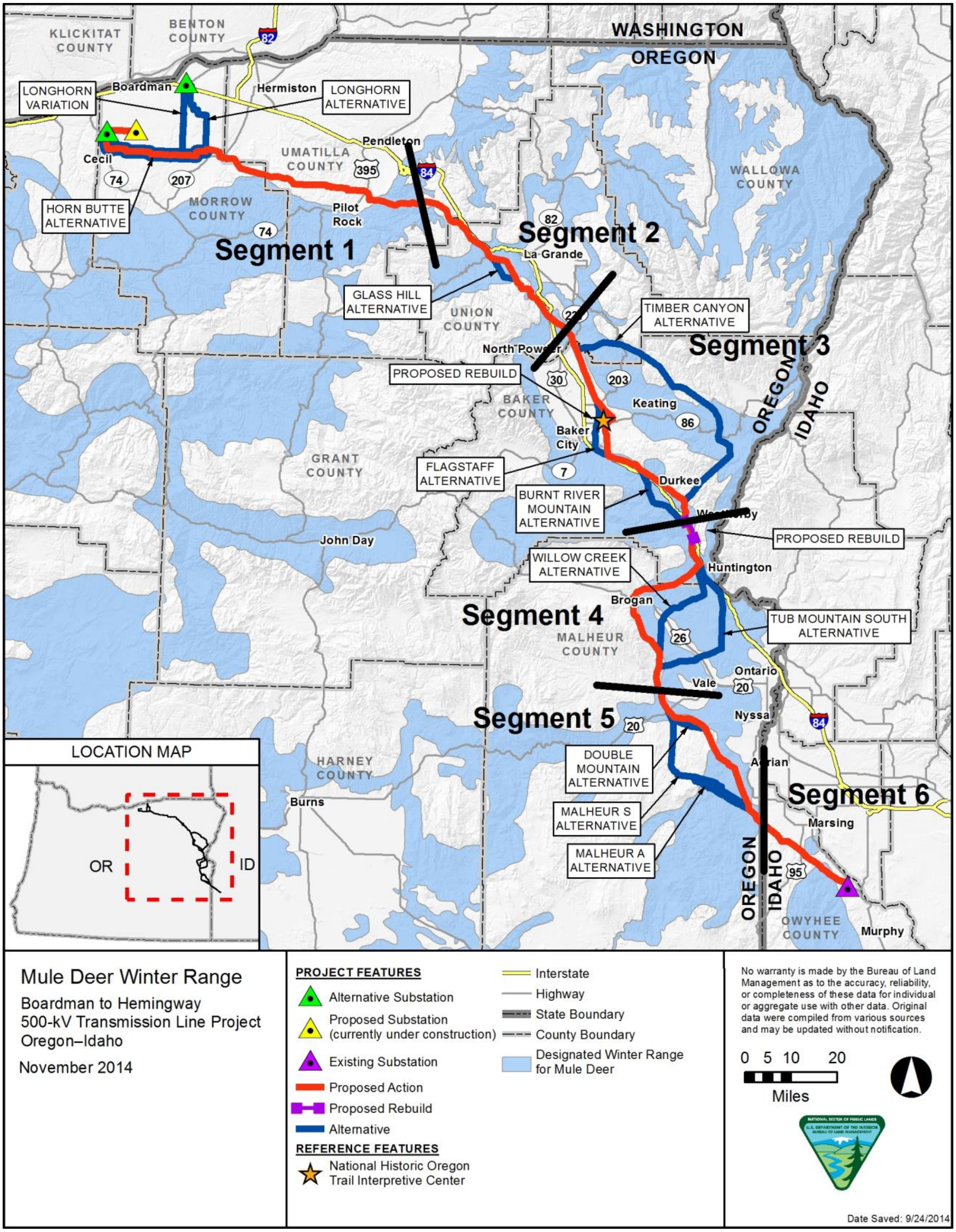


Figure 3-19. Mule Deer Winter Range

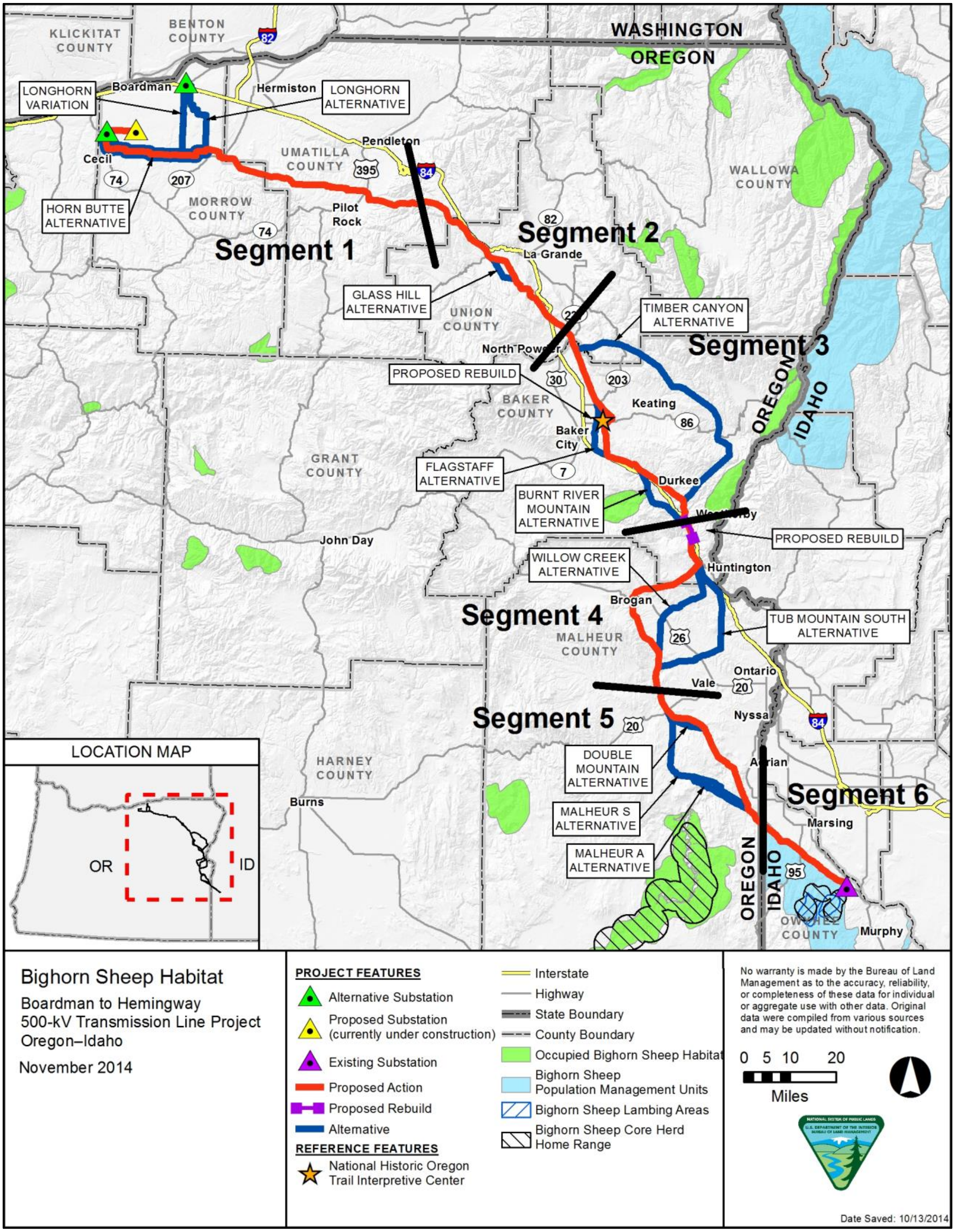
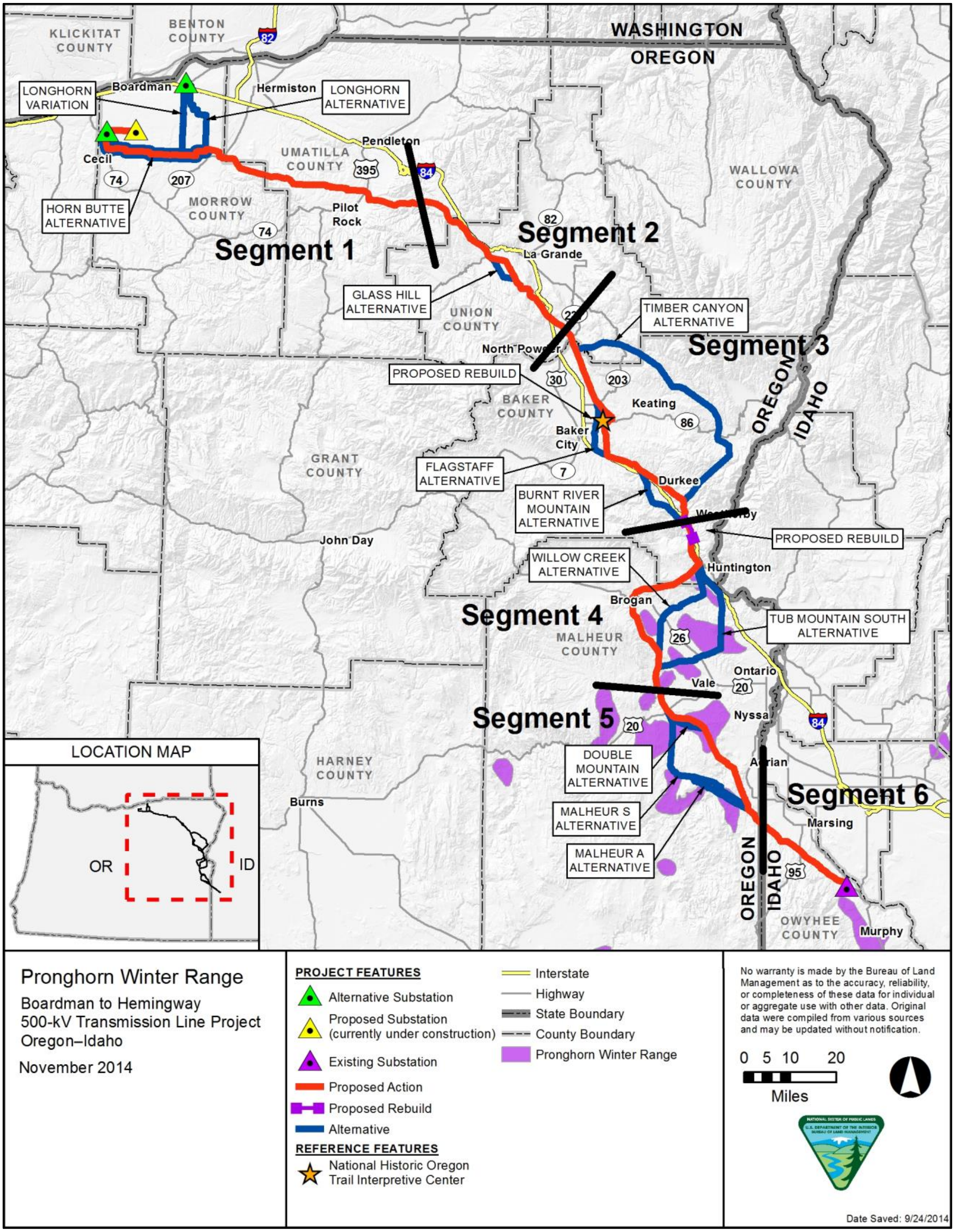


Figure 3-20. Bighorn Sheep Habitat

1



2 **Figure 3-21. Pronghorn Winter Range**

AFFECTED ENVIRONMENT BY SEGMENT

SEGMENT 1—MORROW-UMATILLA

There are three alternative routes in addition to the Proposed Action within Segment 1. The alternatives include the Horn Butte Alternative, the Longhorn Variation, and the Longhorn Alternative. Segment 1 is located in Morrow and Umatilla counties. The Proposed Action and alternatives are described in Chapter 2.

Wildlife Habitat

Agriculture (approximately 52 to 56 percent of the analysis area, depending on alternative) and shrublands (approximately 33 to 36 percent of the analysis area, depending on alternative) comprise the majority of primary wildlife habitats in Segment 1 (Table 3-40**,** Section 3.2.3 Vegetation Resources). Although agriculture occurs throughout Segment 1, these areas are especially concentrated in the western portion of the segment; natural vegetation communities (e.g., grasslands, shrublands) are more prevalent in the central and eastern portions of the segment (Figure 3-22). Forest/woodland habitats account for a very small proportion of the analysis area and occur at the extreme eastern end of the segment where the Proposed Action enters the Blue Mountains (Figure 3-22). Refer to Table B.4-2 (Appendix B.4) for a list of the wildlife species commonly found in the primary wildlife habitats.

Federally Proposed, Endangered, Threatened and Candidate Species

The Washington ground squirrel is the only candidate species known to occur within Segment 1. Suitable habitat for the species occurs within the analysis areas of the Proposed Action and all alternatives.

Washington Ground Squirrel

The Washington ground squirrel is the only candidate species known to occur in Segment 1 and the area contains the most densely occupied habitat for this species in the state of Oregon. Suitable habitat, in the form of primary and secondary habitat is documented within the analysis area for the Proposed Action and all other alternatives.

Suitable habitat for the Washington ground squirrel occurs on private and DOD lands within the analysis area for the Proposed Action, Longhorn Alternative, Longhorn Variation, and the Horn Butte Alternative (Table 3-56). Active Washington ground squirrel colonies were documented along the Proposed Action and alternatives during surveys conducted in 2011, 2012, and 2013.

Special Status Species

Twenty-six special status species may occur, are likely to occur, or are known to occur in Segment 1 (Table 3-57). Information relating to the amount of habitat available for special status species within the analysis area is located in Table 3-38 in Vegetation Section 3.2.3. Habitat locations are depicted in Figure 3-22. A large percentage of available shrubland and grassland habitat in the analysis area contains invasive species such as cheatgrass and has been previously impacted by a variety of activities such as agricultural and energy development. Special status species that have been documented within the Segment 1 analysis area include; bobolink, common night hawk, long billed curlew, Swainson's hawk, western burrowing owl, pallid bat, Washington ground squirrel and white-tailed jackrabbit. Species accounts for these species, and others that may occur in this segment, as identified in Appendix B.4.

Special status species that use agricultural lands in Segment 1 include greater sandhill crane and Swainson's hawk. Greater sandhill crane is typically only found in Segment 1 during migration and Swainson's hawk, a well known long distance migrant, during the breeding season.

Special status species such as common nighthawk, burrowing owl, Swainson's hawk, bats (e.g., pallid bat), and white-tailed jackrabbits forage within shrubland habitat. These species are impacted by loss or modification of habitat for prey species. Two of these species, common nighthawk and Swainson's hawk, are long distance migrants and would only be present in the project area during the breeding season. Burrowing owls are known to nest in shrub- steppe habitat in Morrow and Umatilla Counties and also migrate, although hatch-year males may sometimes over-winter. The most densely occupied breeding area for burrowing owls in the Pacific Northwest is located in Umatilla County, several miles north-east of the analysis area. Bird species such as the bobolink and long billed curlew typically use grasslands for both foraging and nesting habitat. The long billed curlew is a ground nesting species utilizing grasslands as cover for cryptic nests constructed in shallow scrapes in the soil. The common nighthawk typically uses grasslands as foraging habitats, preferring gravelly soils and riverbanks for nesting habitat. Conservation threats to these birds include loss of breeding and foraging habitat resulting from land development practices.

Special status wetland/riparian/aquatic wildlife species occurring in Segment 1 include; Columbia spotted frog (Northern DPS), northern leopard frog, Woodhouse's toad, Jackson Lake springsnail, and western ridged mussel. Threats to these species include include loss or modification of habitat due to soil erosion and sedimentation as a result of construction activities.

Migratory Birds Including Raptors

Wildlife habitats in Segment 1 support many avian species identified as birds of conservation concern within BCRs 9 and 10 (Table 3-58). In addition, existing habitats provide nesting and foraging areas for a variety of raptors not listed as BOCC (Table 3-59). Although fragmented by agricultural areas, habitat for shrubland and grassland species is available throughout the analysis area in Segment 1 (refer to Table 3-38 in Vegetation Section 3.2.3 and Figure 3-22. A detailed discussion of available wildlife habitats in Segment 1 is presented in 3.2.3 Vegetation Resources. The Boardman Grassland Important Bird Area, located in the western-most portion of Segment 1 and directly adjacent and north of the Horn Butte Alternative, provides vital habitat for many native shrubland and grassland species in the area. Although the Proposed Action and alternatives do not cross the Important Bird Area, all alternatives located in the western portion of Segment 1 are within close proximity to the Important Bird Area and associated protected areas.

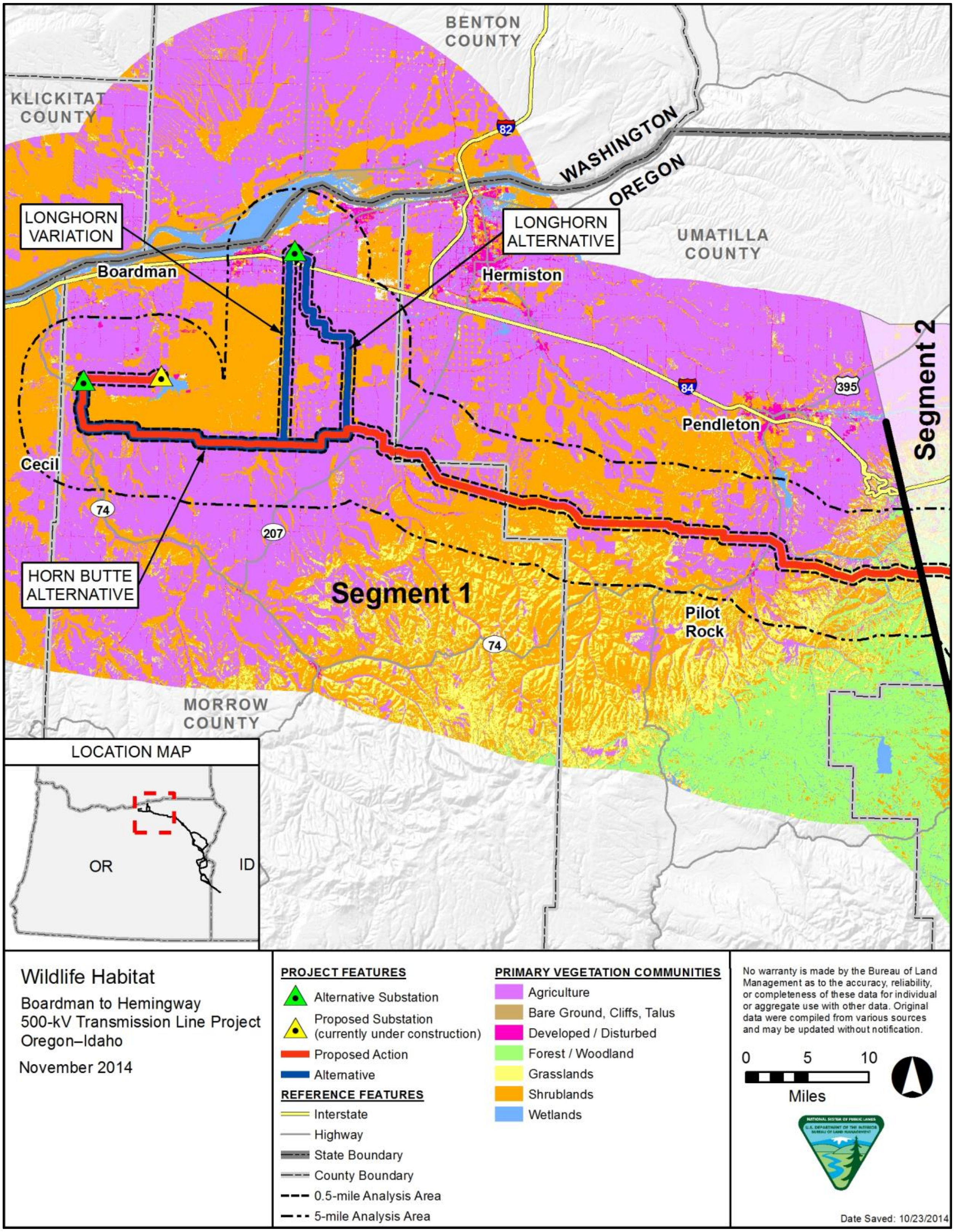


Figure 3-22. Wildlife Habitat, Segment 1

Big Game

Big game species present in Segment 1 include mule deer (*Odocoileus hemionus),* white-tailed deer *(Odocoileus virginianus*) and elk *(Cervus elaphus)*. Cover is limited throughout the Segment and the analysis area provides some forage, although this is may be of poorer quality due to invasive species and extensive agricultural development. Designated summer range for elk, located in the eastern-most portion of the Proposed Action, is fairly limited. Designated winter range for elk and mule deer is also concentrated in the eastern portion of Segment 1. Only the Proposed Action in Segment 1 intersects designated winter range for elk and mule deer (Figure 3-18 and Figure 3-19; ODFW unpublished data).

Segment 2—Blue Mountains

There is one alternative in addition to the Proposed Action within Segment 2, the Glass Hill Alternative. Segment 2 is located in Umatilla and Union Counties. The The Proposed Action and Glass Hill Alternative are described in Chapter 2.

Wildlife Habitat

Forests/woodlands (approximately 61 to 63 percent of the analysis area, depending on alternative) and shrublands (approximately 26 to 28 percent of the analysis area, depending on alternative) comprise the majority of primary wildlife habitats in Segment 1 (Table 3-38, Section 3.2.3 Vegetation Resources). Minor concentrations of shrublands are present at either end of the segment and near the middle of Segment 1, with forests /woodlands distributed throughout (Figure 3-22). A minimal amount of agriculture is present, mostly concentrated near La Grande and at the southern end of this segment (Figure 3-23). Refer to Table B.4-2 (Appendix B.4) for a list of the wildlife species commonly found in the primary wildlife habitats. Suitable habitat for wildlife species analyzed for USFS land in segments 2 and 3 is discussed in the USFS Section of this document.

Federally Proposed, Endangered, Threatened and Candidate Species

The Greater Sage-Grouse is the only candidate species known to occur within Segment 2. Suitable habitat for the species occurs within the analysis areas of the Proposed Action and the Glass Hill Alternative.

Greater Sage-Grouse

A small amount of Greater Sage-Grouse PGH occurs on state and private lands within the Segment 2 analysis areas (Figure 3-24; see Table 3-68). Greater Sage-Grouse lek surveys were conducted for Idaho Power Company during the breeding season in 2010, 2011, 2012, and 2013, and ODFW provided existing lek data for the analysis area. No leks have been identified within the analysis area in Segment 2.

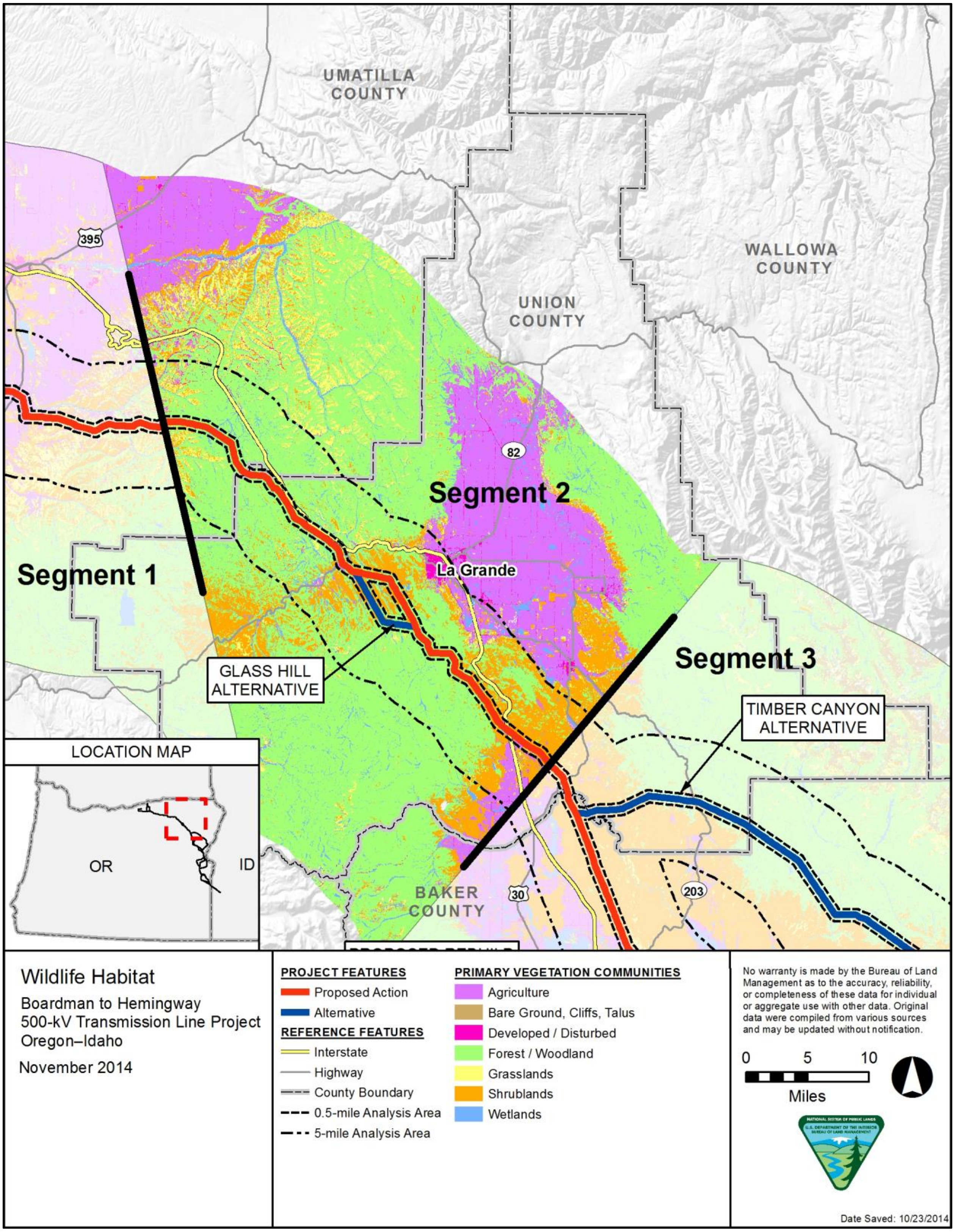


Figure 3-23. Wildlife Habitat, Segment 2

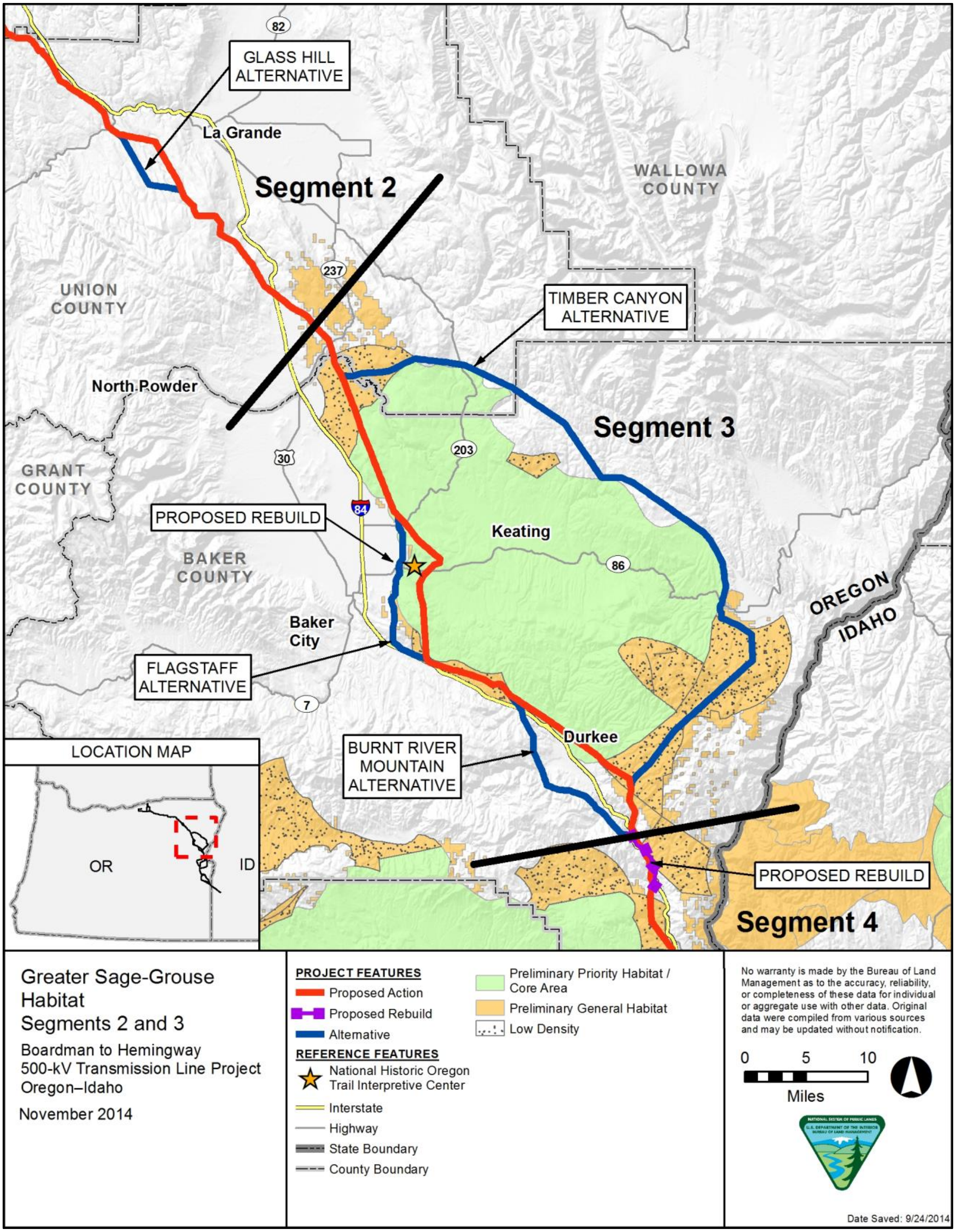


Figure 3-24. Greater Sage-Grouse Habitat, Segments 2 and 3

Suitable habitat for the Greater Sage-Grouse occurs on state and private lands within the analysis area for the Proposed Action in Segment 2 (Figure 3-24). Greater Sage-Grouse lek surveys were conducted for Idaho Power Company during the breeding season in 2010, 2011, 2012, and 2013, and ODFW provided existing lek data for the analysis area. No leks have been identified within the analysis area in Segment 2. The amount of habitat for Greater Sage-Grouse within the analysis area for the Proposed Action and the Glass Hill Alternative is presented in Table 3-68.

Special Status Species

Forty-two special status species may occur, are likely to occur, or are known to occur in Segment 2 (Table 3-57). Information relating to the amount of habitat available for special status species within the analysis area is located in Table 3-38 in 3.2.3 Vegetation. Habitat locations are depicted in Figure 3-23. Special status species that are known to be present in Segment 2 include; American peregrine falcon, several woodpecker species including pileated woodpecker and Lewis's woodpecker, common night hawk, golden eagle, northern goshawk, Greater Sage-Grouse, olive-sided flycatcher, Swainson's hawk, American marten (dispersal), gray wolf, North American wolverine (dispersal), long-legged myotis, Townsend's big-eared bat, and Johnson's hairstreak. Species accounts for these species, and others that may occur in this segment, are included in Appendix B.4 and in the FS MIS discussion.

Some woodpecker species known to or likely to occur in Segment 2, such as pileated woodpecker, are strongly associated with old growth coniferous forest types known to occur in the Blue Mountains. Although old growth multi-strata forest does occur in the watersheds analyzed for the project, high quality old growth habitat is very limited. Primary threats to primary cavity excavators are loss of habitat and habitat fragmentation due to forest clearing and silviculture practices. Olive- sided flycatchers use lower elevation forest clearings adjacent to grasslands and shrublands for foraging habitat, preferring open canopy tree branches for nesting. Suitable habitat for olive-sided flycatcher exists in the Segment 2 analysis area. The American marten and gray wolf utilize high alpine forest habitat, with wolves venturing into lower elevations, potentially hunting along forest margins. Use of the area by marten is expected to be limited, for dispersal. Primary conservation threats to carnivores include habitat loss, fragmentation, and human caused mortality. Sensitive myotis species occurring within this segment are primarily forest dwelling bats. They utilize forest canopies as foraging habitat, sometimes foraging along forest edges over shrublands and grasslands. These areas include utility corridors, especially those located near water sources. While these species will utilize rock outcroppings and caves for roosting, hibernation, and maternity roosts, they are also known to use forest trees for daytime roosts outside of hibernation and breeding seasons. Fringed myotis specifically utilize old growth forest for roosting habitat in Oregon. Spotted bats have more specific habitat requirements, with a preference for forest stands adjacent to conspicuous rock outcroppings. Threats to these species include habitat conversion and loss of habitat due to logging practices.

Special status species that use shrubland habitats include common nighthawk and pallid bat. Both species use shrublands extensively for foraging and are susceptible to disturbances that cause them to abandon nesting and roosting sites and hibernacula.

Special status wetland/riparian/aquatic wildlife species occurring in Segment 2 include; Columbia spotted frog (Northern), northern leopard frog, Rocky mountain tailed frog, Woodhouse's toad, and western ridged mussel. Threats to these species include include loss or modification of habitat due to soil erosion and sedimentation as a result of construction activities. Although not a riparian obligate, Lewis's woodpecker may use decaying cottonwood trees for nesting and is threatened by dead tree and snag removal.

Migratory Birds Including Raptors

Wildlife habitats that occur in Segment 2 support many avian species identified as BOCC within BCR 10 (Table 3-58). These habitats also provide nesting and foraging areas for a variety of raptors (Table 3-59). Habitat for forest/woodland and shrubland species is available across the analysis area in Segment 2 (Table 3-38 in Vegetation [Section 3.2.3 and Figure 3-23). A detailed discussion of available wildlife habitats within the analysis area in Segment 2 is presented in Vegetation Resources, Section 3.2.3. The Ladd Marsh Wildlife Area (ODFW) Important Bird Area, one of the largest remaining wetlands in northeast Oregon established to protect nesting and migrating waterfowl, is located near the south-central portion of Segment 2, approximately 5 miles southest of La Grande. Although the Proposed Action does not cross the designated Wildlife Area, it is adjacent to the western boundary.

Big Game

Big game species known to be present in Segment 2 include mule deer, white-tailed deer, and elk. Major habitat types utilized by big game species in Segment 2 consist primarily of forest/woodland and shrubland types, which provide forage, hiding, and thermal cover.

The analysis areas of the Proposed Action and the Glass Hill Alternative intersect designated winter range for elk and mule deer (Table 3-69; Figure 3-18 and Figure 3-19; ODFW unpublished data).

Segment 3—Baker Valley

There are three alternatives, in addition to the Proposed Action, within Segment 3. The alternatives include the Flagstaff Alternative, the Burnt River Mountain Alternative, and the Timber Canyon Alternative. Segment 3 is located in Union and Baker Counties. The Proposed Action and alternatives are described in Chapter 2.

Wildlife Habitat

Shrublands (approximately 55 to 90 percent of the analysis area, depending on alternative) and forest/woodlands (approximately 1 to 34 percent of the analysis area, depending on alternative) comprise the majority of primary wildlife habitats in Segment 3 (Table 3-38, Section 3.2.3 Vegetation Resources). Shrubland habitat is the dominiant type in the analysis area, with forest/woodland habitat concentrated in the northeast portion of Segment 3, along the Timber Canyon Alternative (Figure 3-25). A small amount of agriculture land occurs in Segment 3 with the majority concentrated in the northwest portion of Segment 3, within the analysis areas for the Proposed Action and the Flagstaff Alternative. Table B.4-2 (Appendix B.4) describes wildlife species commonly found in the primary wildlife habitats.

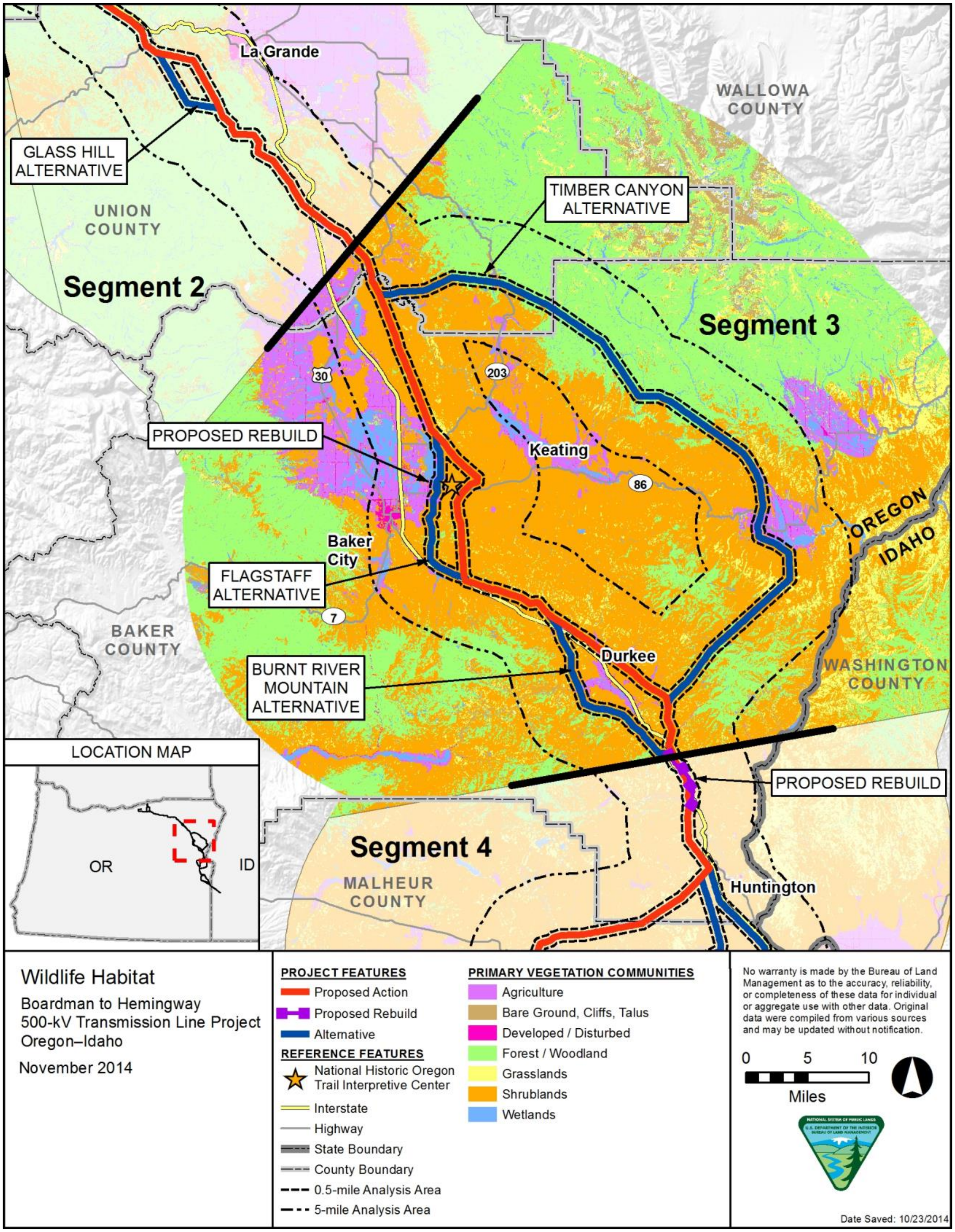


Figure 3-25. Wildlife Habitat, Segment 3

Suitable habitat for wildlife species analyzed for USFS-managed lands, for Segments 2 and 3, is discussed in the USFS Section of this Chapter.

Federally Proposed, Endangered, Threatened and Candidate Species

The Greater Sage-Grouse are the only known candidate species that occurs within Segment 3. Suitable habitat for the species occurs within the analysis areas of the Proposed Action and alternatives, with limited habitat along the Timber Canyon Alternative.

Greater Sage-Grouse

Garton et al. (2011) identified five Greater Sage-Grouse populations in Oregon. Segment 3 runs through one of these, the Baker population, which is located in northeast Oregon (minimum estimated spring population of 872 to 1,650 birds in 2010; Hagen 2011). According to the ODFW Greater Sage-Grouse Strategy, the current amount of habitat available to this population is 853,848 acres.

An ODFW assessment of habitat connectivity provides evidence that connectivity is limited between Greater Sage-Grouse in the Baker Resource Area and northern Malheur County (Hagen 2011). The Baker population appears to be separated by topography and unsuitable habitat from the nearest population in Weiser, Idaho, by approximately 20 miles. Inter-seasonal movements of a radio-marked female Greater Sage-Grouse between its spring/summer range east of Keating, Oregon, and winter locations northwest of Weiser, Idaho, (distance approximately 33 miles) indicate some connection of the Baker population with adjacent populations (USFWS 2013). Additional leks have been found in the Baker area in the last few years during surveys conducted for this project (Idaho Power Company 2010, 2011).

It is unknown if there is movement (dispersal) of birds from habitat east of Interstate 84 to habitats in the southwest portion of Baker County. The ODFW assumes that Greater Sage-Grouse populations east of Interstate 84 are closed to immigration or emigration (i.e., “closed populations”), and those near Malheur County are open populations (i.e., population size is regulated in part by immigration from populations North of Harper). A telemetry study involving 63 Greater Sage-Grouse in Baker County during 2009–2012 found no evidence of dispersal into Malheur County. Most birds occupied relatively small ranges during spring and summer months, but showed large movements to winter habitat. Several birds moved approximately 16 kilometers southwest to the Virtue Flat area for winter. One female moved out of the study area to winter in southwest Idaho (distance of 33 miles) and returned to Oregon in spring (USFWS 2013). However, recent evidence of birds moving from Keating Valley and Virtue Flat regions indicates seasonal migrations into Idaho (BLM 2014).

More than 80 percent of the historical sagebrush habitat for the Baker Population remains available today but steeper habitat and rugged topography reduces the suitability for Greater Sage-Grouse. Nearly 300,000 acres in this region were identified as priority areas for conservation, and includes much of the current range of the Baker population (USFWS 2013).

ODFW recent calculations of 2013 spring trend (moving 5-year average) count for the Baker Core population of the Sage-Grouse population estimates only 571 birds, which is 62.6 percent below the

2003 baseline of 2,017 birds. There are 34 known leks within this core area, 10 of which have not had any observed male attendance in the last 10 years.

The Baker population is more at risk and likely less resilient than other populations, since connectivity to other populations appears limited. There is no redundancy in this population as all birds are believed to be in one general area. For the entire population, the environmental similarity to extirpated populations is high (Wisdom et al. 2011). Most (68 percent) of the Greater Sage-Grouse habitat for the Baker population is in private ownership and 31 percent is administered by BLM (Hagen 2011). This is the largest proportion of privately managed Greater Sage-Grouse habitat for any population in Oregon. Consequently, there are limited regulatory mechanisms in place, making it uncertain as to whether state-recommended conservation measures and practices will be applied on the majority of lands within this population (USFWS 2013). The most critical Greater Sage-Grouse habitat in the Baker Valley area occurs in the Magpie Peak area. Impacts to this area would be estimated at a higher magnitude than adjacent areas (ODFW, personal communication, September 09, 2014).

Invasive weeds and juniper encroachment are considered to be the primary threats to this population (Hagen 2011b), but other threats to this population include renewable energy development (primarily wind), energy transmission, and Off Highway Vehicle recreation (USFWS 2013).

Suitable habitat for the Greater Sage-Grouse occurs on federal, state, and private lands within the analysis areas for the Proposed Action and all alternatives in Segment 3 (Figure 3-24 and Table 3-70). Surveys have been conducted for Greater Sage-Grouse leks for Idaho Power Company during the breeding season in 2010, 2011, 2012, and 2013, and ODFW provided existing lek data for the analysis area. The number of leks and the amount of habitat for Greater Sage-Grouse within the analysis area for the Proposed Action and all alternatives in Segment 3 are presented in Table 3-70.

Special Status Species

Fourty special status species may occur, are likely to occur, or are known to occur in Segment 3 (Table 3-57). Information relating to the amount of habitat available for special status species within the analysis area is located in Table 3-38 in Vegetation Section 3.2.3. General habitat locations are depicted in Figure 3-25. Special status species that are known to be present in Segment 3 include; American peregrine falcon, woodpecker species including pileated woodpecker and Lewis's woodpecker, common night hawk, golden eagle, Greater Sage-Grouse , Swainson's hawk, American marten, gray wolf, North American wolverine (dispersal), long-legged myotis, Townsend's big-eared bat, white-tailed jackrabbit, and Johnson's hairstreak. Species accounts for these species, and others that may occur in this segment, as identified in Table 3-57, are included in Appendix B.4.

Special status species that use shrubland habitats include; common nighthawk, pallid bat, and white-tailed jackrabbit. Nighthawks and pallid bats are susceptible to disturbances that cause them to abandon roosting and nesting sites and hibernacula. White-tailed jackrabbits forage on grasses and forbs in shrublands and are threatened by habitat modification and predation by large hawks.

Special status forest/woodland species present in the analysis area for Segment 3 include species such as cavity-nesting woodpeckers, olive-sided flycatcher, American marten (dispersal), and gray wolf. The majority of habitat for these species, in the form of dry Ponderosa pine, mixed conifer and lodgepole pine forest types is located along the Timber Canyon Alternative (including portions on the Wallowa-Whitman Nation Forest).Threats to special status species include habitat loss, modification, and fragmentation.

Special status wetland/riparian/aquatic wildlife species occurring in Segment 3 include the Columbia spotted frog (Northern), northern leopard frog, Woodhouse's toad, and western ridged mussel. Threats to these species include include loss or modification of habitat due to soil erosion and sedimentation as a result of construction activities. Although not a riparian obligate, Lewis's woodpecker may use decaying cottonwood trees for nesting and could be impacted by dead tree and snag removal.

Migratory Birds Including Raptors

Wildlife habitats that occur in Segment 3 support many avian species identified as BOCC that occur within BCR 10 (Table 3-58). These habitats also provide nesting and foraging areas for a variety of raptors, including a high density of golden eagle breeding territories (Table 3-59, Figure 3-25). A detailed discussion of available wildlife habitats within the analysis area in Segment 3 is presented in Vegetation Resources, Section 3.2.3.

Big Game

Big game species present in the analysis area for Segment 3 include mule deer, white-tailed deer, elk and bighorn sheep. Major habitat types identified and utilized by these species in Segment 3 include shrublandsand forests/woodlands, primarily used by mule deer and elk, and cliffs and talus areas utilized by bighorn sheep. The analysis areas of the Proposed Action and all alternatives intersect designated winter range for elk and mule deer and bighorn sheep habitat (Table 3-71; Figure 3-18, Figure 3-19, Figure 3-20; ODFW unpublished data).

Segment 4—Brogan Area

There are two alternatives and the Proposed Action within Segment 4. The alternatives include the Willow Creek Alternative and the Tub Mountain South Alternative. Segment 4 is located in Baker and Malheur Counties. The Proposed Action and alternatives are described in Chapter 2.

Wildlife Habitat

Shrublands (approximately 74 to 87 percent of the analysis area, depending on alternative) and grasslands (approximately 3 to 17 percent of the analysis area, depending on alternative) comprise the majority of primary wildlife habitats in Segment 4 (Table 3-38 in Section 3.2.3 Vegetation Resources). Shrubland habitat is evenly distributed throughout the analysis areas for the Proposed Action and all alternatives in Segment 4 (Figure 3-26). Highly limitedgrassland habitat is present, with small isolated sites scattered throughout Segment 4 (Figure 3-26). Small acreages of bare ground/cliff/talus habitat are present, with the majority concentrated in the southwestern portion of Segment 4, within the analysis area for the Proposed Action, and small portions of the analysis areas for the Willow Creek and Tub Mountain South Alternatives. Table B.4-2 (Appendix B.4) provides additional information for common wildlife species found in Segment 4.

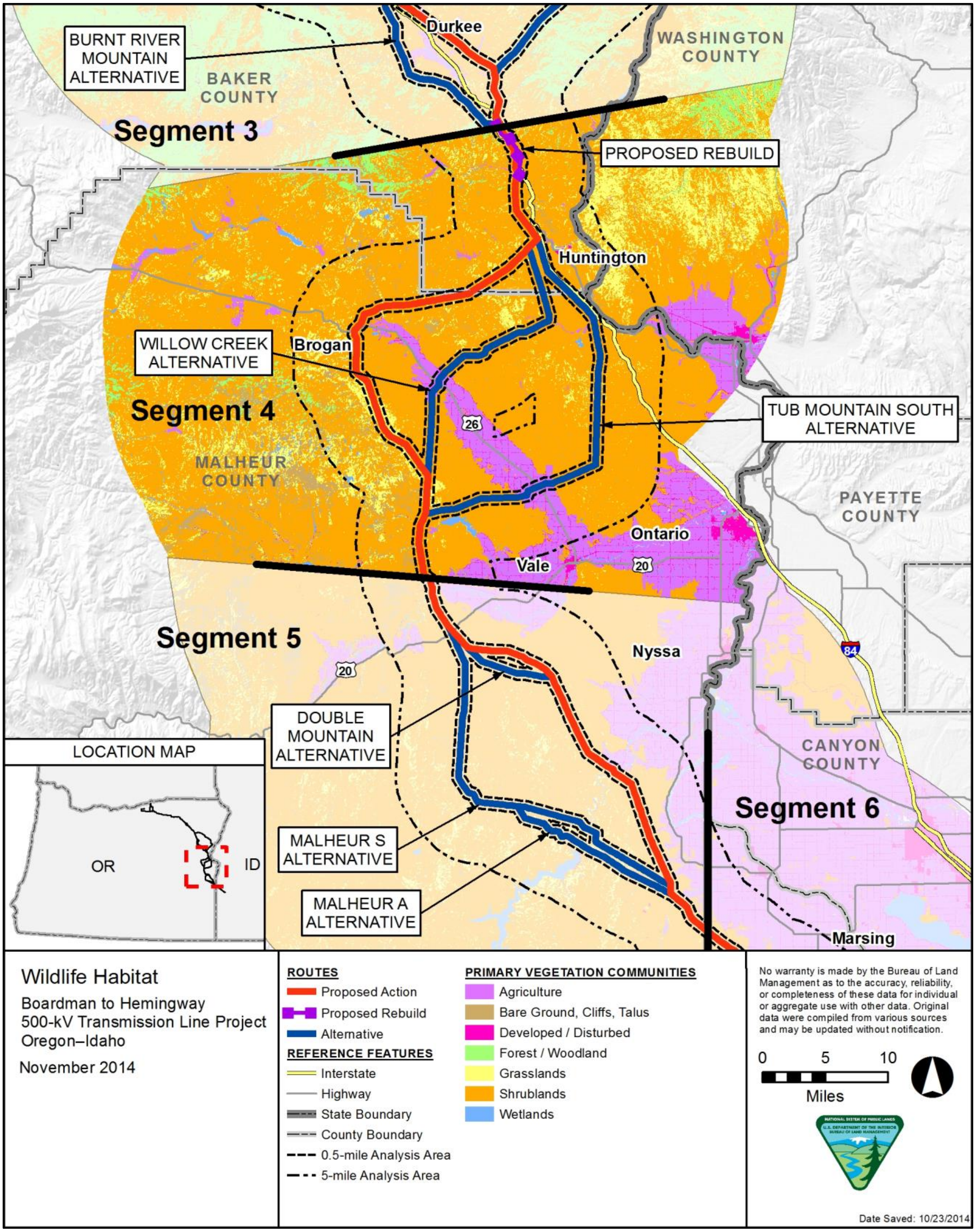


Figure 3-26. Wildlife Habitat, Segment 4

Federally Proposed, Endangered, Threatened and Candidate Species

There is one candidate speciesthat is known to occur within Segment 4, Greater Sage-Grouse. Suitable habitat for this species occurs within the analysis areas of the Proposed Action and all alternatives. Suitable habitat is also believed to exist for Columbia spotted frog.

Columbia Spotted Frog

Although Columbia spotted frog (Great Basin DPS) occupancy has not been verified in Segment 4 of the analysis area, preferred habitat types for both the Northern and Great Basin populations overlap in some areas. Suitable habitat is believed to exist and the species is known to occur in Malheur County (USFWS 2014).

The majority of suitable habitat appears to be located in the southern portion of Segment 4, near the junction of the Proposed Action and the Tub Mountain South Alternative (Figure 3-14). Estimates regarding the size and types of habitat available have not yet been determined.

Greater Sage-Grouse

Segment 4 crosses through areas mapped for the Northern Great Basin population, a large Greater Sage-Grouse population found in Oregon, Idaho, Nevada, and Utah. The population is divided into two segments, with the largest portion in Oregon, Idaho, and Nevada and the smaller in northwestern Utah, known as the Box Elder area. This population occurs on a large amount of publicly managed land (largely BLM), and is among the least fragmented and largest sagebrush-dominated landscapes within the extant range of Greater Sage-Grouse (USFWS 2013). In 2007, this population was estimated to have a minimum of 9,114 males (Garton et al. 2011).

Loss of sagebrush habitat has been and continues to be a threat to the Northern Great Basin population in Oregon. Between 1963 and 1974, 500,000 acres of sagebrush habitat was seeded to crested wheatgrass or sprayed with herbicide, and 1,600 water developments and 463 miles of pipeline were installed in the Vale District BLM's area for the Vale project. More recently, wildfire is the most significant threat to landscape scale losses of sagebrush habitat. In conjunction with fire, invasive weeds are also one of the greatest risks to the 4+ million acres of sagebrush habitat for this population in Oregon. More than 580,000 acres is already dominated by invasive species (Hagen 2011b). Other threats in this region include mining development, renewable energy development, transmission, and juniper encroachment at higher elevations. West Nile virus has also been detected in mosquitoes in this region (Oregon Public Health Division 2014) and the population was subjected to the largest known West Nile virus mortality event involving Greater Sage-Grouse in Oregon. Despite efforts to manage wildfire risks, wildfires and invasive species have continued to reduce the quality of habitat in portions of this area. Due to existing landscape features, this northwestern portion of the population is at higher risk from landscape altering events such as high intensity wildfire (USFWS 2013).

The ODFW's Greater Sage-Grouse Conservation Assessment and Strategy has identified essential habitats which are referred to as "core habitat" and are equivalent to BLM PPH. These "core habitat" units represent key habitat areas as determined by breeding bird densities, winter habitat use, and connective habitat use. In Oregon, these units are called Oregon "Priority Areas for Conservation" or

Oregon PACs and represent approximately 90 percent of the breeding population within 38 percent of the species range in Oregon. In most cases, Oregon PACs identify biologically meaningful units for management and monitoring that are different from USFWS PACs documented in the 2013 COT Report. In some cases, Oregon PACs combine smaller "core habitat" polygons into a single unit (ODFW unpublished data).

The Proposed Action and all alternatives cross the Cow Valley Oregon PAC in segment 4. The Cow Valley Oregon PAC is the northernmost concentration of sage-grouse in the Northern Great Basin population. Based on Integrated Landscape Assessment Project (ILAP; Gaines et al. 2013) data, 98 percent (361,433 acres) of the 368,615 acre Cow Valley Oregon PAC is comprised of existing Greater Sage-Grouse habitat (300,608 acres; 83.2 percent) or areas with the potential to provide Greater Sage-Grouse habitat in the future (60,826 acres; 16.8 percent).

There are at least 38 leks or lek complexes within the Cow Valley Oregon PAC. Since 1998, protocol level lek surveys have been conducted annually at three of these: Becker Creek, Worthington, and County Border #2. The spring trend for maximum attendance per lek (moving 5-year average) was 28 Greater Sage-Grouse in 2014 which is 65 percent above the 2003 baseline of 16 Greater Sage-Grouse.

All three leks are located to the north of the Proposed Action. The Worthington and Becker Creek lek complexes are located 5.0 and 4.9 miles from the Proposed Action, respectively. Greater Sage-Grouse have not been observed at the Becker Creek lek complex in the last 4 years. Attendance at the Worthington lek complex is relatively low (12 sage-grouse in 2014), but has increased 63 percent from the 2003 baseline. The County Border #2 lek has the highest attendance (42 sage-grouse in 2014) compared to the other lek complexes, has increased 79 percent from the 2003 baseline, but is located approximately 3.7 miles from the Proposed Action.

The Cow Valley Oregon PAC is adjacent to the Bully Creek Oregon PAC located to the south. It is quite probable that Greater Sage-Grouse in the Cow Valley Oregon PAC constitute an "open population" and disperse or move between nearby Oregon PACs (e.g., Bully Creek, Drewsey, Crowley) as connectivity between these Oregon PAC is not severely limited.

A review of a Greater Sage-Grouse habitat viability model (Hagen 2011) that encompasses the Cow Valley Oregon PAC shows that the Proposed route traverses areas of contiguous high habitat viability, while the Willow Creek and Tub Mountain South Alternatives cross areas of contiguous low to negligible habitat viability.

Suitable habitat for the Greater Sage-Grouse occurs on federal, state, and private lands within the analysis areas for the Proposed Action and all alternatives in Segment 4 (Figure 3-27, Table 3-72). Greater Sage-Grouse lek surveys were conducted for Idaho Power Company during the breeding season in 2010, 2011, 2012, and 2013, ODFW provided existing lek data for the analysis area. The number of leks and the amount of habitat for Greater Sage-Grouse within the analysis area for the Proposed Action and all alternatives in Segment 4 are presented in Table 3-72.

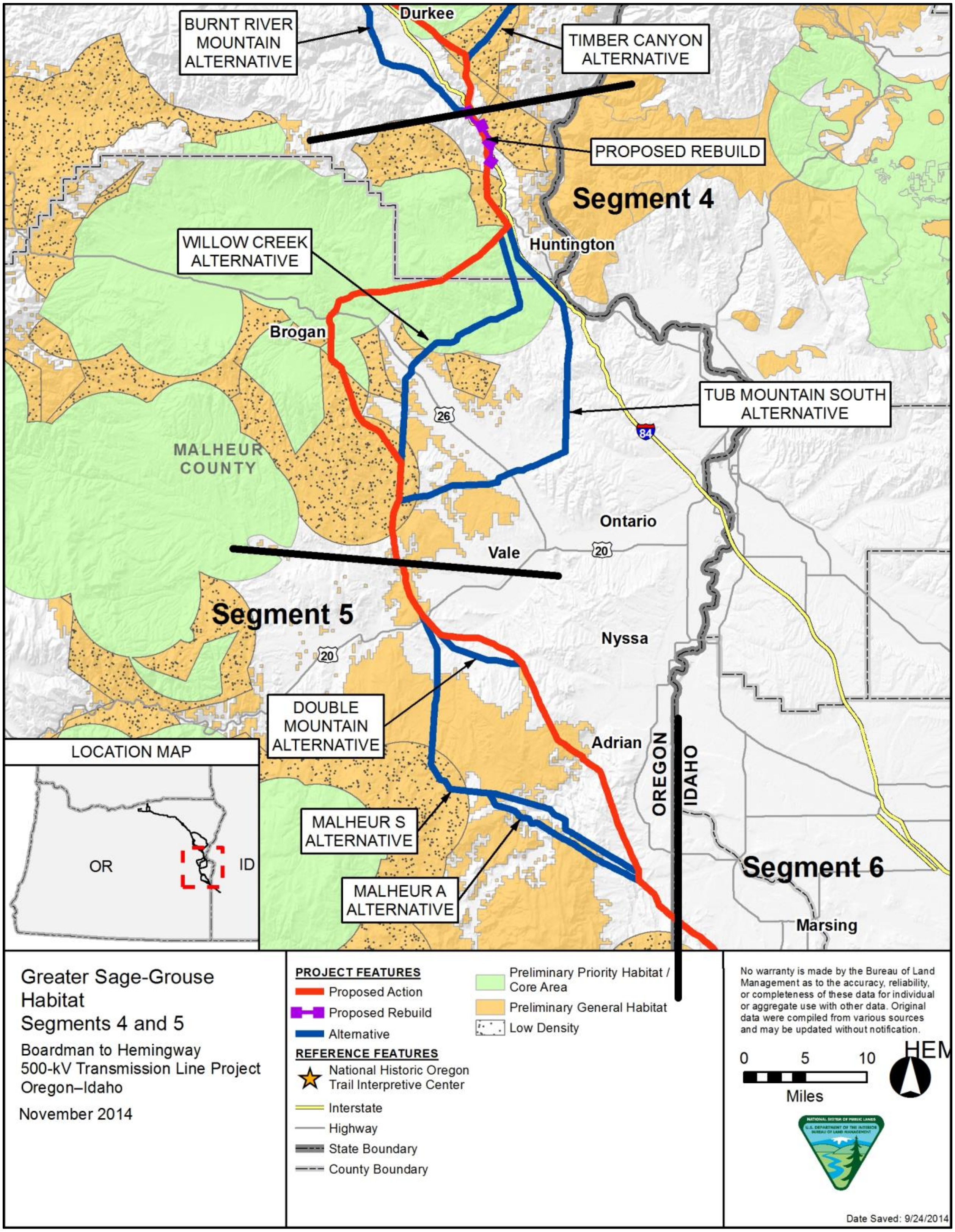


Figure 3-27. Greater Sage-Grouse Habitat, Segments 4 and 5

Special Status Species

Twenty-seven special status species may occur, are likely to occur, or are known to occur in Segment 4 (Table 3-57). Information relating to the amount of habitat available for special status species within the analysis area is located in Table 3-38 in Vegetation Section 3.2.3. Habitat locations are depicted in Figure 3-26. Special status species that are known to occur in Segment 4 include; northern leopard frog, bobolink, common night hawk, Greater Sage-Grouse , long billed curlew, Swainson's hawk, and pallid bat. Species accounts for these species, and others that may occur in this segment, as identified in Table 3-57, are discussed in Appendix B.4.

Special status species that use shrubland habitats in Segment 4 include; common nighthawk, pallid bat, burrowing owl, and white-tailed jackrabbit. Shrubland habitat use and conservation priorities for all four species have been discussed in previous segments. Grasslands in Segment 4 provide primary (breeding) and secondary (foraging, dispersal) habitat for avian species such as the bobolink, long billed curlew, and common nighthawk. Grassland habitat use and conservation threats for all three species have been discussed in previous segments.

Special status wetland/riparian/aquatic wildlife species occurring in Segment 4; include Columbia spotted frog (Northern and Great Basin DPS), northern leopard frog, Woodhouse's toad, and western ridged mussel. Threats to these species include loss or modification of habitat due to soil erosion and sedimentation as a result of construction activities.

Migratory Birds Including Raptors

A variety of habitats occur in Segment 4 that support many species identified as birds of conservation concern that occur within BCR 9 (Table 3-58). These habitats also provide nesting and foraging areas for numerous species of raptors (Table 3-59). Habitat for forest/woodland and shrubland species is available in varying amounts throughout the analysis area in Segment 4 (Table 3-38 in Vegetation Section and Figure 3-26). A detailed discussion on the wildlife habitats within the analysis area in Segment 4 is presented in Vegetation Resources, Section 3.2.3.

Big Game

Big game species present in the analysis area for Segment 4 include elk, mule deer, white-tailed deer and pronghorn. Major habitat types identified and utilized by these species in Segment 4 include shrublands and grasslands. The analysis areas of the Proposed Action and all alternatives intersect designated winter range for elk, mule deer, and pronghorn (Table 3-73; Figure 3-18, Figure 3-19, and Figure 3-21; ODFW unpublished data).

Segment 5—Malheur

There are three alternatives in addition to the Proposed Action within Segment 5. The alternatives include the Double Mountain Alternative, Malheur S Alternative, and the Malheur A Alternative. Segment 5 is located in Malheur County. The Proposed Action and alternatives are described in Chapter 2.

Wildlife Habitat

Shrublands (approximately 92 to 95 percent of the analysis area, depending on alternative) followed by grasslands (approximately 2 to 5percent of the analysis area, depending on alternative) comprise the majority of primary wildlife habitats in Segment 5 (Table 3-38 in Section 3.2.3 Vegetation Resources). Shrubland habitat is evenly distributed throughout the analysis areas for the Proposed Action and all alternatives in Segment 5 (Figure 3-28). Wetland/riparian/open water habitat is mostly concentrated along the Owyhee and Snake Rivers in the southern portion of Segment 5 in the analysis areas for the Proposed Action, the Malheur A Alternative, and the Malheur S Alternative (Figure 3-28). Refer to Table B.4-2 (Appendix B.4) for a list of the wildlife species commonly found in the primary wildlife habitats.

Federally Proposed, Endangered, Threatened, and Candidate Species

There are two candidate species known to occur within Segment 5; Columbia spotted frog (Great Basin DPS) and Greater Sage-Grouse. Documented and available suitable habitat for these species occurs within the analysis areas of the Proposed Action and all alternatives.

Columbia Spotted Frog

Segment 5 contains documented and suitable habitat for Columbia spotted frog (Great Basin DPS) (Figure 3-14). The amount of wetland habitat (230 acres) that is present within the analysis areas for the Proposed Action and the alternatives in Segment 5 is described in Table 3-55.

Greater Sage-Grouse

Segment 5 intersects known habitat for the Greater Sage-Grouse Northern Great Basin population. This population was estimated, in 2007, to have a minimum of 9,114 males (Garton et al. 2011). The Northern Great Basin population occupies portions of Oregon, Nevada, Idaho, and Utah, and is separated from adjacent populations by distance (12 to 37 miles) and topography. Current threats and trends in habitat loss and fragmentation for the Northern Great Basin Greater Sage-Grouse population have been discussed previously in Segment 4.

Suitable habitat for the Greater Sage-Grouse occurs on federal, state, and private lands within the analysis areas for the Proposed Action and all alternatives in Segment 5 (Figure 3-27, Table 3-75). Tetra Tech conducted Greater Sage-Grouse lek surveys for Idaho Power Company during the breeding season in 2010, 2011, 2012, and 2013, and ODFW provided existing lek data for the analysis area. The number of leks and the amount of habitat for Greater Sage-Grouse within the analysis area for the Proposed Action and all alternatives in Segment 5 are presented in Table 3-75.

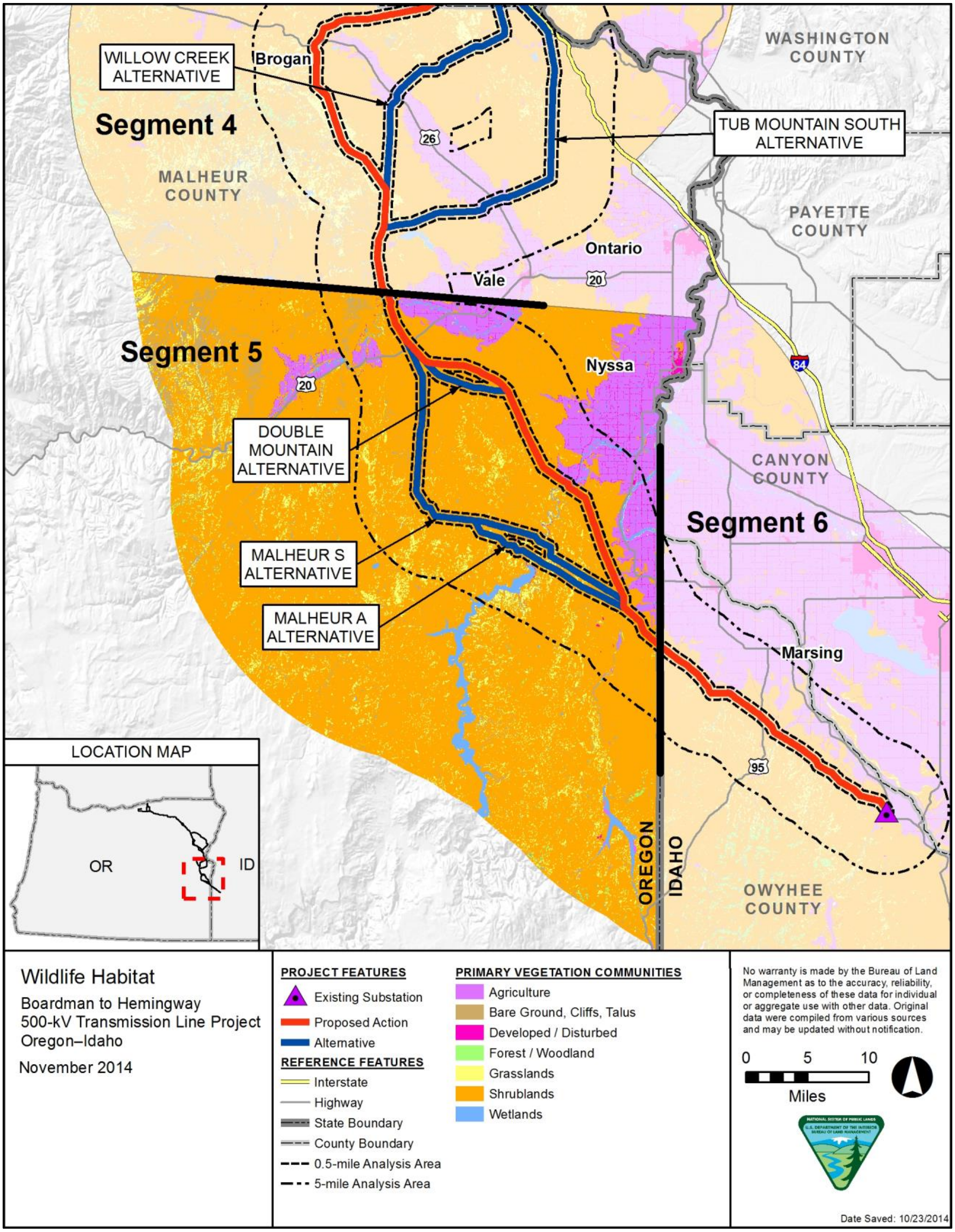


Figure 3-28. Wildlife Habitat, Segment 5

Special Status Species

Based on an assessment of known species distributions and habitats, 29 special status species may occur, are likely to occur, or are known to occur in Segment 5 (Table 3-57). The amount of habitat available within the analysis area for each special status species can be found by referencing the appropriate habitat type in Table 3-38 in Vegetation Section 3.2.3, and the habitat locations are depicted in Figure 3-28. Special status species that are known to be present in Segment 5 include; common night hawk, golden eagle, Greater Sage-Grouse, Lewis's woodpecker, Swainson's hawk, western burrowing owl, pygmy rabbit, and white-tailed jackrabbit. Species accounts for these species, and others that may occur in this segment, are discussed in Appendix B.4.

Special status species that use shrubland habitats in Segment 5 include; common nighthawk, pallid bat, and white-tailed jackrabbit. Shrubland habitat use and conservation threats for all three species have been discussed in previous segments.

Special status wetland/riparian/aquatic wildlife species occurring in Segment 5 include; Columbia spotted frog (Great Basin DPS), northern leopard frog, Woodhouse's toad, and Owyhee hot springsnail. Threats to these species include include loss or modification of habitat due to soil erosion and sedimentation as a result of construction activities. Although not a riparian obligate, Lewis's woodpecker may use decaying cottonwood trees for nesting and could be impacted by dead tree and snag removal.

Migratory Birds Including Raptors

Wildlife habitats that occur in Segment 5 support many avian species identified as BOCC that occur within BCR 9 (Table 3-58). These habitats also provide nesting and foraging areas for numerous species of raptors (Table 3-59). Habitat for shrubland species is available throughout the analysis area in Segment 5 (Table 3-38 in the Vegetation Section 3.2.3 and Figure 3-28). A detailed discussion of available wildlife habitats within the analysis area in Segment 5 is presented in 3.2.3 Vegetation Resources.

Big Game

Big game species present in the analysis area for Segment 5 include mule deer and pronghorn. The major habitat type utilized by these species in Segment 5 is shrublands. The analysis areas of the Proposed Action and all alternatives intersect designated intersects designated winter range for mule deer and pronghorn (Table 3-76; Figure 3-19 and Figure 3-21; ODFW unpublished data).

Segment 6—Treasure Valley

Only the Proposed Action is located in Segment 6; there are no alternatives. The Proposed Action in Segment 6 is located entirely in Owyhee County, Idaho. The Proposed Action is described in Chapter 2.

Wildlife Habitat

Shrublands (approximately 94 percent of the analysis area) comprise the majority of primary wildlife habitats in Segment 6 (Table 3-38 in Section 3.2.3 Vegetation Resources). Shrubland habitat dominates the southern portion of the Proposed Action analysis area while agriculture is interspersed with shrubland habitat on the north side of the analysis area (Figure 3-29). Refer to Table B.4-2 (Appendix B.4) for a list of the wildlife species commonly found in the primary wildlife habitats.

Federally Proposed, Endangered, Threatened and Candidate Species

There are two candidate species that are known to occur within Segment 6; Columbia spotted frog (Great Basin DPS) and Greater Sage-Grouse. Suitable habitat for these species occurs within the analysis area of the Proposed Action.

Columbia Spotted Frog

Segment 6 contains documented and suitable habitat for Columbia spotted frog (Great Basin DPS) (Figure 3-14). The amount of verified wetland/habitat (61 acres) that is present within the analysis area for the Proposed Action in Segment 6 is provided in Table 3-55.

Greater Sage-Grouse

As with Segments 4 and 5, Segment 6 also intersects the Northern Great Basin population and population estimates and trends in habitat loss and fragmentation have been discussed previously. In Idaho, BLM developed its PPH/PGH map based on Greater Sage-Grouse breeding density, connectivity, and habitat criteria. In general, the higher quality and/or most heavily used habitats are classified as PPH while other occupied habitats are designated PGH. The State of Idaho has identified Greater Sage-Grouse habitats in the West Owyhee Conservation Area as Core, Important, and General habitat zones. The General habitat zone designation by the State of Idaho and PGH by the BLM are comparable.

Despite efforts to manage wildfire risks, wildfires and invasive species have continued to reduce the quality of habitat in portions of this area. Idaho’s Murphy Fire Complex recently affected roughly 600,000 acres of habitat for this population (USFWS 2013).

Suitable habitat for the Greater Sage-Grouse habitat occurs on federal, state, and private lands within the analysis area for the Proposed Action in Segment 6 (Figure 3-30, Table 3-78). Greater Sage-Grouse lek surveys have been conducted for Idaho Power Company during the breeding season in 2010, 2011, 2012, and 2013, and IDFG provided existing lek data for the analysis area. The number of leks and the amount of habitat for Greater Sage-Grouse within the analysis area for the Proposed Action in Segment 6 are presented in Table 3-78.

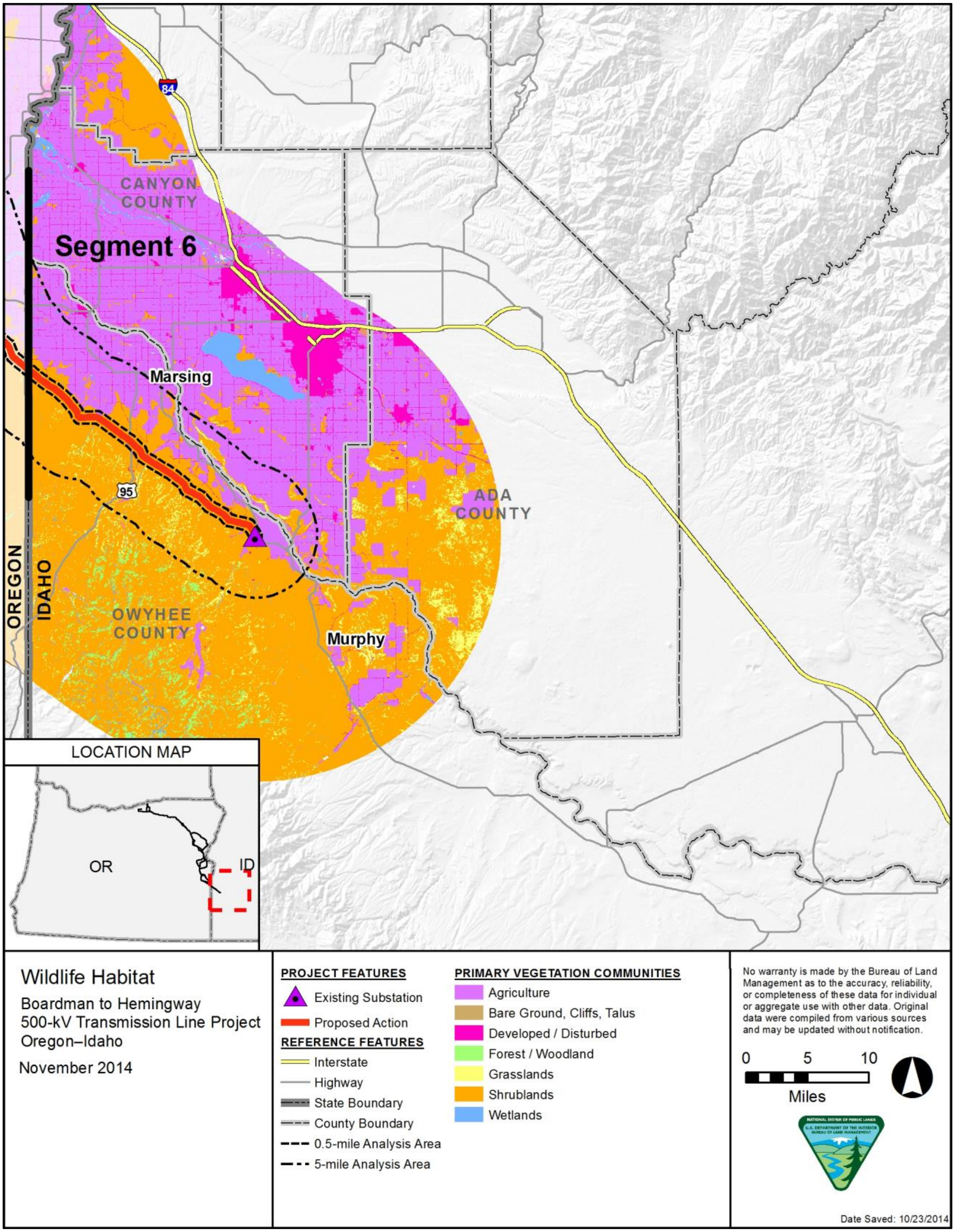


Figure 3-29. Wildlife Habitat, Segment 6

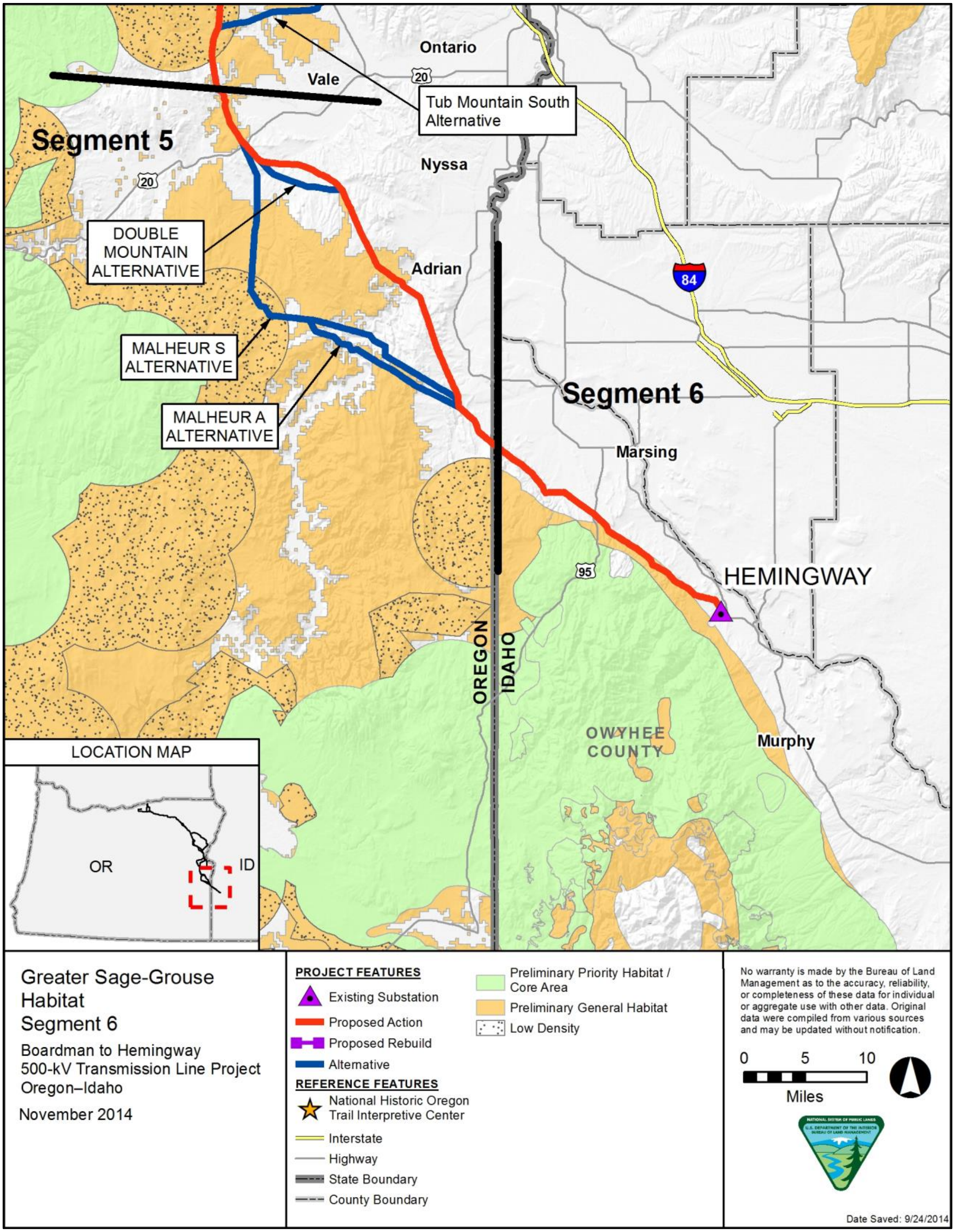


Figure 3-30. Greater Sage-Grouse Habitat, Segment 6

Special Status Species

Twenty-nine special status species may occur, are likely to occur, or are known to occur in Segment 6 (Table 3-57). Information relating to the amount of habitat available for special status species within the analysis area is located in Table 3-38 in 3.2.3 Vegetation. Habitat locations are depicted in Figure 3-29. Special status species that are known to be present in the Segment 6 analysis area include; Mojave black-collared lizard, western ground snake, black-throated sparrow, Brewer's sparrow, ferruginous hawk, golden eagle, Greater Sage-Grouse , Lewis's woodpecker, loggerhead shrike, prairie falcon, sage sparrow, California bighorn sheep, and Merriam's ground squirrel. Species accounts for these species and others that may occur in this segment are included in Appendix B.4.

Special status species that use shrubland habitats include; common nighthawk and pallid bat. Habitat use by these species is discussed in previous segments. Special status species that use shrubland habitats in Segment 6 include; Brewer's sparrow, black-throated sparrow, and sage sparrow, which utilize sagebrush shrublands for foraging and breeding habitat. Dense sage shrublands with grassland patches or adjacent grassland habitat are preferred habitat for these sparrows. Threats to these species include; habitat conversion to agriculture, development, and wildfire. Mountain quail distribution is limited in southern Idaho. Populations are known to occur in counties adjacent to the project area and suitable habitat may exist in the project area. However, habitat for the mountain quail is specific in structure and vegetation composition. Given the specific habitat needs and unknown distribution within the project area vicinity, it is unlikely that the mountain quail occurs within the project area.

Merriam's ground squirrel can be found in open canopy shrublands and shrublands with a grassland component. They are known to occur in southeastern Oregon and southern Idaho, but are only listed as a special status species by the Idaho BLM. Conservation concerns affecting Merriam's ground squirrel include hunting, trapping, and poisoning as well as habitat loss and conversion.

Fringed myotis, spotted bat, and Townsend's big-eared bat forage within shrubland habitats. Townsend's big-eared bats will travel long distances to forage while spotted bats and fringed myotis typically forage within habitats adjacent to roosting habitat such as forests, caves, and cliffs. Conservation threats to these bats include loss of prey due to agricultural pesticide use and habitat loss or conversion. Bats are also particularly sensitive to human disturbances that may cause them to abandon roosting habitat and hibernacula.

Special status wetland/riparian/aquatic wildlife species with suitable habitat in Segment 6 include; Columbia spotted frog (Great Basin DPS), northern leopard frog, and Woodhouse's toad. Threats to these species include include loss or modification of habitat due to soil erosion and sedimentation as a result of construction activities. Although not a riparian obligate, Lewis's woodpecker may use decaying cottonwood trees for nesting and could be impacted by dead tree and snag removal.

Migratory Birds Including Raptors

Wildlife habitats that occur in Segment 6 support many avian species identified as BOCC that occur within BCR 9 (Table 3-58). This segment contains important source and secondary habitat for a number of species of raptors (Table 3-59). Habitat for shrubland species is available throughout the analysis area in Segment 6 (Table 3-38 in the Vegetation Section 3.2.3 and Figure 3-29). A detailed discussion of available wildlife habitats within the analysis area in Segment 6 is presented in Vegetation Resources, Section 3.2.3. Both the Snake River Birds of Prey Important Bird Area and the Deer Flat National Wildlife Refuge Important Bird Area are located near the east end of Segment 6. Although the Proposed Action does not intersect either Important Bird Area, some indirect and cumulative impacts may occur.

Big Game

Big game species present in the analysis area for Segment 6 include mule deer and bighorn sheep. The major habitat type utilized by these species in Segment 6 is shrublands. The analysis area of the Proposed Action intersects designated mule deer winter range and bighorn sheep population management units (Table 3-79; Figure 3-19 and Figure 3-20; ODFW unpublished data).

3.2.4.6 Environmental Consequences

Potential effects to wildlife species and associated habitat were evaluated within the Analysis Area. Direct, indirect and residual effects are described in this section. Effects to habitats are discussed, with the assumption that if appropriate habitat is available for a species (within its known range), then that species may occupy the habitat.

Multiple land use activities in the general project area may and will result in cumulative impacts to wildlife species. Cumulative effects are described in Section 3.3.

Methodology

The methodology for assessing the impacts on wildlife resources associated with the Proposed Action and alternatives generally includes the following:

1. Developing criteria for assessing the intensity of potential effects on wildlife resources
2. Identifying the types of effects that could result from construction, operation, and maintenance of the B2H Project
3. Assessing initial impacts on wildlife resources present in the ROW corridors, assuming the presence of special status wildlife species in suitable habitat types
4. Identifying applicable design features for minimizing adverse effects
5. Disclosing potential residual impacts on wildlife resources (i.e., impacts anticipated after application of the design features)
6. Identifying mitigation measures to consider as part of the mitigation planning in the Final EIS

Criteria for Assessing Intensity of Impacts

Criteria were developed to assess the intensity of potential effects on wildlife species associated with implementation of the project. These criteria were based on considerations of relative abundance of each habitat type; consideration of a species legal status, regulatory protection, and susceptibility to temporary or permanent disturbances. Criteria were developed for wildlife habitat, special status species, migratory birds including raptors, big game, and Management Indicator Species (Table 3-63). Effects determinations for ESA candidate species follow standard USFWS impact analysis categories and are described for the appropriate tables.

Table 3-63. Criteria for Assessing Impacts on Wildlife

Intensity of Impacts	Description
High	• Mortality of a federally listed or candidate species • Mortality of nonlisted wildlife, special status wildlife, and management indicator species or permanent displacement from habitat that results in population or species-level effects • Permanent displacement from habitats on which federally listed or candidate species depend • Permanent loss of habitat for federally listed or candidate species • Permanent loss of habitat that would result in species- or population-wide effects for special status species and management indicator species • Loss or modification of vegetation communities that support a wide range of species, regenerate slowly, and would require significant modification of vegetation during construction
Moderate	• Permanent loss of important habitat for special status wildlife and management indicator species • Mortality of special status wildlife and management indicator species that does not reduce population viability • Permanent loss of biologically important habitats • Disturbance to wildlife during a critical or sensitive period • Permanent displacement of nonlisted wildlife from important habitats that does not have population-level effects • Loss or modification of vegetation communities that provide value to wildlife but that regenerate from anticipated disturbance rapidly and loss or modification of common vegetation that would require permanent alteration to accommodate the project • Increase in habitat fragmentation • Modification to big game winter range • Modification to home range • Permanent modification to viewshed for big game • Removal or disturbance to nesting sites for migratory birds and raptors
Low	• Loss of habitat for special status species (other than federally listed and candidate species), management indicator species, and nonlisted species that does not result in population- or species-level effects • Temporary disturbance to habitat • Loss or modification of vegetation communities that provide little value to wildlife and that regenerate rapidly and loss or modification of vegetation that is not a component of the natural landscape • Loss of habitat for nonlisted species that does not result in population- or species-level effects • Limited or incidental mortality of special status wildlife, management indicator species, and non-listed species that does not result in population- or species-level effects • Temporary displacement of special status wildlife (other than federally listed and candidate species), management indicator species, and nonlisted wildlife from seasonal habitats • Disruption of breeding and foraging behavior for migratory birds and raptors

The duration of effects on wildlife resources is described according to the following terms and definitions:

- Immediate – Approximately one growing season or several months or less
- Short-term – 3 years (30-month construction, 6 month post-construction reclamation)
- Long-term – 50 years (direct and indirect impacts – intial term of the right-of-way grant)

DIRECT AND INDIRECT EFFECTS TO WILDLIFE COMMON TO ALL ALTERNATIVES

FEDERALLY PROPOSED, ENDANGERED, THREATENED, AND CANDIDATE SPECIES

ESA species would be vulnerable to impacts from the proposed activities related to the B2H project primarily; habitat removal and disturbance from line construction (long term), noise and dust from construction activities (short term), tower placement (long term), substation construction (short term), placement of multi-use areas and tensioning sites and road construction and upgrading (short and long term).

The three candidate species identified for further analysis, Columbia spotted frog (Great Basin distinct population segment - DPS), Greater Sage- Grouse (Columbia Basin DPS), and Washington ground squirrel are discussed in more detail in this section and in the appropriate project segment discussions.

Habitat Removal

Common effects to wildlife species related to the construction, operations, and maintenance of the Proposed Action and alternatives include many direct and indirect effects from construction that would persist through the life of the project (i.e., operations and maintenance). Restoration efforts would ameliorate some direct effects in the short-term. Additional short-term direct and indirect effects may occur during normal operations and routine maintenance of Project facilities. Adherence to project design criteria and mitigation frameworks, including the project-specific Avian Protection Plan, should aid in reducing a variety of direct and indirect impacts to wildlife utilizing the area.

A direct impact on wildlife habitat would be removal of vegetation for the right-of-way, roads, pads for transmission towers, transmission line safety, and ancillary facilities including regeneration stations, substations, staging areas and fly yards. Habitat for some species, such as birds, would be impacted both vertically (obstruction of flight paths) and horizontally. Clearing of vegetation for these project facilities would decrease habitat quantity and quality for wildlife species, and the degree of impact would vary depending on vegetation type and recovery time.

Short-term (occurring during the construction period only) direct impacts on habitat would include the clearing/use of staging areas or fly yards for storage and assembly of equipment and structures during construction. Areas that contained native vegetation prior to construction would be restored in accordance with IPC's Reclamation Plan. All revegetation efforts would be conducted in accordance with landowners' or land management agencies' requirements.

Habitat Fragmentation

In addition to the direct effects of habitat loss, the Proposed Action and Alternatives could indirectly impact wildlife by decreasing habitat quality through habitat fragmentation. Habitat fragmentation breaks up contiguous areas of vegetation/habitat into smaller patches. Habitat fragment size plays a crucial role in landscape function and many ecosystem interactions, including the distribution of plants and animals, fire regime, vegetation structure, and wildlife habitat.Unlike other infrastructure that creates a solitary footprint, powerlines create a continuous line of fragmentation on both vertical and horizontal levels. Project-related habitat fragmentation would also result in loss of connectivity between primary breeding, foraging and dispersal habitats for some local species (i.e big game winter and summer range, pileated woodpecker old growth connectivity).

Project-related habitat fragmentation would result from direct vegetation removal for right-of-ways, roads and ancillary facilities and multi-use areas. For some species, permanent access roads (standard of 8 feet wide, 14 to 16 feet wide during construction) could cause habitat fragmentation by serving as a barrier to movement, thereby isolating subpopulations and increasing the risk of local extirpation (Shepard et al. 2008; FHWA 2011). This could be predominantly experienced by smaller prey species, less mobile species such as herpetofauna and snails, or those less likely to move through open areas devoid of vegetation such as forest-dependent species. Due to the existing fragmentation of Columbia spotted frog habitat in Segments 5 and 6, creation of roads and disturbance corridors in suitable habitat would increase fragmentation. Impacts resulting from fragmentation would be short-term and long-term and would begin with the construction of the transmission line and new access roads, upgrading and increase of use on existing roads and would continue for the life of the project. Habitat restoration and re-vegetation following construction should decrease the severity of some impacts.

Apart from breaking up blocks of suitable habitat, fragmentation also increases edge effects, which results when two different types of habitat lie adjacent to one another other. Edge effects can create a number of impacts, from altering nutrient flows/cycling; increasing the rate of invasion by noxious weeds, invasive wildlife species, and pathogens; lowering the carrying capacity of a habitat/patch, and disrupting meta-population dynamics (Sanders et al. 1991). Although roads may not serve as a barrier to movement for all species, roads can also reduce habitat quality by creating edge effects. Edge effects tend to be more pronounced with increasing differences in adjacent habitat types, for example, mature multi-strata forest adjacent to grassland. The creation of edges in forests impacts microclimatic factors such as wind, humidity, and light, and could lead to a change in plant or animal species composition within the adjacent habitat, or increase the rate of invasion by noxious weeds, invasive wildlife species, and pathogens (Murcia 1995). Invasive plant species that could spread due to increased sunlight and removal of established plants in the project area include Canada thistle (*Circium arvense*), diffuse knapweed (*Centaurea diffusa*), and yellow star-thistle (*Centaurea solstitialis*).

The impacts of edge effects on wildlife, both adverse and beneficial, are highly dependent on species' habitat and life history requirements. For instance, some species are more susceptible to predators or nest predation near edges, while predators and some grazers/browsers (i.e wolves, mule deer) may benefit from increased food availability. Not all wildlife species are affected by fragmentation and patch size identically (Bissonette and Storch 2003; D'Eon 2007). Possible effects of fragmentation and edge effects to threatened, endangered, and sensitive wildlife species are described in the appropriate segments.

Noise

Another direct effect on habitat from Project construction would be noise disturbance, which would cause displacement for some wildlife species in the short-term. Some construction activities would raise the sound above ambient levels. Ambient noise in forested habitats generally ranges from 25 to 44 decibels (dB; USFWS 2006), and is usually lower in open and shrub habitats such as those found along the majority of the Proposed Action route.

Visual disturbance would also displace some wildlife species from suitable and/or occupied habitat in and around construction areas. Displacement could result in; less available or lower quality forage, loss of access to preferred nesting/breeding sites, increased exposure to predation, and increased energy expenditure. Long-term impacts could result from visual cues that cause wildlife to avoid the area around the transmission line.

Fire Hazard

Construction activities could inadvertently cause fires, causing a loss of habitat and impacting wildlife, potentially both in the short and long term. Because warm and dry conditions are likely throughout the summer, the risk of wildfires during construction of the project may be elevated. Impacts from fires caused by the project would include changes in wildlife habitat and direct mortality to some slow-moving and fosserial wildlife species.

Fugitive Dust

An indirect effect on habitat that could occur during the construction period is fugitive dust dispersing from the immediate construction area. Impacts from fugitive dust would last longer than the construction timeline. High levels of fugitive dust can impact the growth of some organisms, especially mosses and lichens, and impact water sources. Most impacts from fugitive dust would last only until the next rain event, when the dust is washed away and diluted. Applying dust suppression techniques, such as watering construction areas, would reduce impacts from fugitive dust.

Management Indicator Species

The effects analysis for MIS is described in Table 3-64 and Table 3-65, for wildlife habitat on FS lands located in Segments 2 and 3 (Proposed Action and Timber Canyon Alternative). Additional information relating to potential effects to MIS resulting from the Proposed Action and Timber Canyon Alternative are discussed in Cumulative effects to wildlife species (Section 3.3).

American Marten

No suitable source habitat for the American marten would be impacted by the Proposed Action or the Timber Canyon Alternative; therefore, no direct or indirect effects are anticipated. Effects to secondary and dispersal habitat would be expected to be negligible. Refer to Table 3-64 and Table 3-65 for more information.

Northern Goshawk

Removing canopy cover and large trees where suitable source habitat is present would affect nesting habitat availability and nesting success. Additionally, if existing nests are active during construction, disturbance associated with construction activity may result in failure of nests. Indirect effects could include habitat fragmentation, displacement from foraging habitat, and decrease in prey abundance.

Project design features and mitigations, such as nest site buffers and timing restrictions, should aid in decreasing impacts to northern goshawks (Appendices C and D). Although the Proposed Action would directly and indirectly affect source habitat and may affect individuals, it is not expected to have a measurable effect on overall habitat (at the Forest level) or population trends for northern goshawk. Refer to Table 3-64 and Table 3-65 for more information.

Pileated Woodpecker

The main threat to this species is habitat loss, primarily through timber harvest. Timber harvest impacts this species by decreasing the seral stage of forested habitat and removing mature trees, snags, and large down wood, eliminating both nesting substrate and foraging areas that this species requires (Bull 2003, NatureServe 2010). In addition, displacement of primary cavity excavators, like pileated woodpecker, directly impacts habitat availability for secondary cavity nesting birds and other wildlife (i.e. flying squirrel, American marten) (Wales et al. 2011).

Road creation, and upgrades and increased use of existing roads, increases human access, reduces snag density and habitat as a result of the conversion of forest to roadway, increases firewood cutting of snags and overall human disturbance, including illegal hunting activities. Project activities would increase road use on existing roads in the short-term to mid-term, and would decrease to maintenance (occasional) use during the life of the project. Two predominant tree species in the project area, ponderosa pine and western larch, are used for firewood and provide some of the most suitable nest and roost sites for cavity dependant wildlife.

Direct effects to pileated woodpecker habitats would include habitat removal; removing large snags and downed wood which would decrease foraging and nesting habitat. Indirect effects to pileated woodpecker could include displacement from added noise, visual disturbance from heavy equipment and traffic, and fugitive dust during construction. Effects could also include increased predation from introduction of predatory perches (powerline).

Project design features and mitigations, such as seasonal timing restrictions, should aid in decreasing impacts to pileated woodpeckers (Appendices C and D). Although project activities could impact individuals, the Proposed Action is not expected to have a measurable effect on habitat or population trends of pileated woodpeckers. Refer to Table 3-64 and Table 3-65 for more information.

Primary Cavity Excavators

Direct effects to primary cavity excavator habitat would include habitat removal; removing large snags would affect foraging and nesting habitat. In the short to mid-term there may be impacts in the form of disruption of breeding activities from construction activities and road use. Indirect effects to primary cavity excavators could result in displacement from added noise, visual disturbance from heavy equipment and traffic, and fugitive dust during construction.

Project design criteria and mitigations, such as seasonal timing restrictions, should aid in decreasing impacts to primary cavity excavators (Appendices C and D). Although the Proposed Action would directly and indirectly effect suitable habitat and may affect individuals, it is not expected to have a measurable effect on habitat or population trends of primary cavity excavators. Refer to Table 3-64 and Table 3-65 for more information.

Rocky Mountain Elk

Analysis of effects of roadways in the HEI analysis is calculated by considering access roads to fly yards and staging areas, constructed or improved open roads for construction as “open roads”. Though some of these roads and other areas would technically be “closed” after construction they would be used routinely for maintenance and would most likely be used by ATVs. The Wallowa-Whitman National Forest calculated the roads as “open” in an attempt to show the maximum potential disturbance to elk. The assumption is that the effect would be somewhere in between no action and having all new roads considered open.

Elk habitat would be impacted by the Proposed Action. The Wallowa-Whitman National Forest projected an analysis of HEI values for watersheds affected by the Proposed Action after construction for cover (0.69), habitat effectiveness size and spacing (0.75) and road density (0.53) for a total HEI value of 0.66 (optimal HEI value is 1.0). The comparison of HEI values suggests that an increase in road density as a result of the Proposed Action will lower the road density HEI value but will not affect the total HEI value.

The Timber Canyon Alternative would also impact elk habitat. The Wallowa-Whitman National Forest projected an analysis of HEI values for watersheds affected by the Timber Canyon Alternative after construction for cover (0.68), habitat effectiveness size and spacing (0.60) and road density (0.52) for a total HEI value of 0.60 (optimal HEI value is 1.0). With this alternative, the comparison of HEI values suggests that an increase in road density would lower the road density HEI value as well as the total HEI value.

Direct effects to elk could also include displacement during construction activities and traffic-related mortality. Indirect effects to elk could include added noise, visual disturbance from heavy equipment and traffic, fugitive dust dispersing from the immediate construction area, and small amounts of air pollution from the exhaust from construction equipment. It is anticipated that suitable habitat would be directly and indirectly affected by the Proposed Action and the Timber Canyon Alternative. The Proposed Action and the Timber Canyon Alternative, however, are not anticipated to have a measurable and detectible effect on habitat or population trends of Rocky Mountain elk in the analysis area.

1 **Table 3-64. Management Indicator Species Analysis of Effects—Watersheds (5th HUC) by Proposed Action**

	Beaver Creek- Grande Ronde Watershed			Five Points- Grande Ronde Watershed		
MIS	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**
American Marten *Martes americana*	No	0 acres	Lacks the acres of cold/moist multi-story old growth to support a population of marten.	Yes	0 acres	The combination of warm, dry forest types, early seral stages, and high levels of disturbance and fragmentation in the area surrounding the utility corridor makes this area unlikely to support a population of marten (Trail 2012).
Northern Goshawk *Accipeter gentilis*	Yes	2.99 acres of identified source habitat (0.0008%)	Core nest habitat of two historical nests intersects the utility line. If active during construction, construction activity may result in failure of nests.	Yes	10.54 acres of identified source habitat (0.004%)	Source habitat would be intersected by utility corridor. Removing canopy cover and large trees would effect nesting success. If nests are found, timing restrictions would apply.
Pileated Woodpecker *Drycopis pileatus*	Yes	0 acres of source habitat	Removing large snags would effect foraging and nesting habitat	Yes	0 acres of identified source habitat	Ground reconnaissance shows habitat more abundant than indicated by the model (Trail 2012). Removing large snags would effect foraging and nesting habitat
Primary Cavity Excavators	Yes	Conifer forest habitat including Douglas-fir, ponderosa pine, and lodge pole pine, with large diameter snags is found in this watershed.	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags ($\geq$21 in dbh) are limited.	Yes	Predominantly conifer forest habitat including Douglas-fir, ponderosa pine, with large diameter snags is found in this watershed.	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags ($\geq$21 in dbh) are limited (Trail 2012).

1 **Table 3-65. Management Indicator Species Analysis of Effects—Watersheds (5th HUC) Effected by Timber Canyon Alternative**

	Big Creek Watershed			Eagle Creek Watershed			Ruckles Creek–Powder River Watershed		
MIS	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**
American Marten *Martes americana*	No	—	—	Yes	0 acres	We assume all potential habitats below the construction line would be rendered unusable by marten. 0 acres identified.	No	—	—
Northern Goshawk *Accipeter gentilis*	Yes	4.25 acres of identified source habitat (0.1% of potential habitat in watershed)	If nests are found within a 30 acre buffer, timing restrictions would apply	Yes	0 acres of identified source habitat	If nests are found within a 30 acre buffer, timing restrictions would apply	Yes	19.18 acres of identified source habitat (1.3% of potential habitat in watershed)	2 historical nest sites are intersected by the ROW . If active during construction, construction activity could cause nest failure and/or nest site abandonmen t.

	Big Creek Watershed			Eagle Creek Watershed			Ruckles Creek–Powder River Watershed		
MIS	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**	**Supports Population**	**Habitat Intersected by Right-of-Way**	**Summary of Effects**
Pileated Woodpecker *Drycopis pileatus*	No	4.25 acres of identified source habitat (0.2% of potential habitat in watershed)	Removing large snags would affect foraging and nesting habitat	Yes	0 acres	Removing large snags would affect foraging and nesting habitat	No	9.51 acres of identified source habitat (1% of potential habitat in watershed)	Removing large snags would affect foraging and nesting habitat
Primary Cavity Excavators	Yes	Conifer forest habitat with large diameter snags is found in this watershed	Snag densities are within the historical ranges as described in DecAID (Mellen et al. 2006), although large snags (≥21 in dbh) are limited	Yes	Conifer forest habitat including Douglas-fir, ponderosa pine, and lodge pole pine, with large diameter snags	Snag densities vary within the watershed, but generally fall within the 30% tolerance level (Snow Basin 2012).	Yes	Conifer forest habitat with large diameter snags is found in this watershed	Snag densities vary within the watershed but generally fall within the 30% tolerance level (Snow Basin 2012).

Direct and Indirect Effects by Segment

Segment 1—Morrow-Umatilla

Wildlife Habitat

The highest percentage of anticipated impacts in Segment 1 would be to agricultural lands, followed by shrublands and grasslands. The amount of each primary wildlife habitat type that would be disturbed within the right-of-way in Segment 1 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3. The primary impact to shrubland habitat, most of which is shrub-steppe, would result from construction and would include habitat removal and fragmentation. Unfragmented shrublands are a vital habitat characteristic for many wildlife species. However, this habitat type has been degraded, fragmented, and eliminated by conversion to agriculture, livestock grazing, invasion of exotic plants, and tree succession (Rich et al. 2005). Hann et al. (1997) estimate that over 30 percent of this habitat type in the Interior Columbia Basin has been lost. The Proposed Action and all alternatives in Segment 1 would further fragment this habitat type. Areas cleared during construction could take over 20 years to recover and regain their function as wildlife habitat. The effects of this could include changes in plant and wildlife species composition, increase in invasive plants and wildlife, and decrease in reproductive success of sagebrush-obligate wildlife species such as sage thrasher, Brewer's sparrow, and sagebrush lizard. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and all alternatives in Segment 1 would result in long-term high impacts to this habitat type.

Native grasslands in the Interior West have also experienced degradation and fragmentation resulting in reduced of function as wildlife habitat. A large percentage of the grassland habitat in the project area is heavily fragmented and impacted by invasive species such as cheatgrass and bulbous bluegrass. Temporary, construction-related removal of grasslands would cause temporary loss of this habitat type. However, vegetation would re-grow following construction, and this habitat type would recover fairly quickly, especially if protected from grazing. Wildlife species that use grasslands would still experience Project-related impacts such as disturbance and increased susceptibility to predation. However, the short-term loss and minimal amount of grassland habitat that would be disturbed during construction would likely have marginal impacts on any wildlife species, as they would move to adjacent undisturbed grassland until disturbed areas are restored to their former state following construction, as long as adjacent habitats have not reached the species/niches carrying capacity. Because grassland habitats provide value to wildlife but regenerate quickly following disturbance, the Proposed Action and all alternatives in Segment 1 would result in short-term moderate impacts to this habitat type. Impacts would be considered high in areas where vegetative componenets are predominantly native (i.e areas adjacent to Boardman Grasslands Important Bird Area). In order to effectively mitigate for Project-related impacts, mitigation measures should include revegetation of native species at suitable sites.

Federally Proposed, Endangered, Threatened and Candidate Species

Washington Ground Squirrel

All alternatives pass through habitat that does and potentially could support Washington ground squirrels. Current ODFW guidance identifies Washington ground squirrel colonies (including a 785-foot buffer of suitable habitat around the burrow or colony) as an avoidance area for energy development projects. Washington ground squirrels field surveys were conducted in 2011 and 2012 to determine locations of active colonies within 785 feet of the Proposed Action and alternatives. Active Washington ground squirrels colonies were documented along the Proposed Action and alternatives during surveys conducted in 2011, 2012, and 2013. Wildlife (PRC-19) also directs the proponent to conduct pre-construciton surveys in suitable habitat to identify colony locations prior to project implementation. If colonies are identified, appropriate mitigation measures will be utilized (i.e. timing restrictions, relocation).

The amount of available Washington ground squirrel habitat that would be impacted within the ROW for the Proposed Action and all alternatives in Segment 1 is identified in Table 3-66.

The potential effects of the Proposed Action and all alternatives on the Washington ground squirrel include; direct mortality, disturbance, and loss or modification of habitat. Washington ground squirrels and/or their burrows could be crushed by constriction equipment and foraging habitat could be impacted during construction. Construction related noise and dust disturbance would also occur during construction, which could potentially make habitat temporarily unsuitable for this species. Under the current BMPs for Washington ground squirrels, ground surveys have been done to determine, to the best extent possible, where the Proposed Action and Alternatives cross current habitat located within the 785 foot buffer to limit potential impacts to the species. After construction is complete, there could be an increase in predation by raptors that perch and nest on the new transmission towers. Because juvenile Washington ground squirrels regularly disperse from occupied colonies (Klein 2005 found an average dispersal probability of 0.72), this increased predation could impact squirrels attempting to disperse into suitable but unoccupied habitats in addition to squirrels present in occupied habitats (i.e., colonies).

Table 3-66. Summary of Effects by Alternative to Washington Ground Squirrel in Segment 1

		Washington Ground Squirrel Suitable Habitat		
Alternative	**Total Miles**	**Analysis Area acres**	**Suitable habitat within ROW acres[1]**	**Effects Determination**
Proposed Action	86.9	122,323	2632 (21.7%)	MIIH
Horn Butte Alternative	80.3	110,936	2437 (18.3%)	WIFV
Longhorn Alternative	71.2	72,999	2157 (18.0%)	MIIH
Longhorn Variation	75.2	92,327	2275 (34.9%)	MIIH

Table Note: [1] percent of right-of-way with suitable habitat; NI = No Impact; MIIH = May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species; WIFV = Will Impact Individuals or Habitat with a Consequence that the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species; BI = Beneficial Impact

All alternatives have relatively high percentages (18 – 35) of suitable habitat that would be impacted within the right-of-way corridor (Table 3-56, Figure 3-16, and Table 3-66). However, habitat quality varies along each alternative and some alternatives, depending upon proximity to protected core areas (i.e. Boardman Bombing Range and Important Bird Area) appear to have higher quality habitat available. Due to existing land ownership in the project area and the specific habitat requirements for Washington ground squirrel, there may be low availaibility of suitable mitigation sites. In addition, existing range for this species is already restricted and some occupied areas continue to be impacted by other activities.

With the exception of roughly 30 miles of corridor associated with the Proposed Action in the eastern portion of Segment 1, all alternatives either cross or are in close proximity to known primary habitat and core areas for Washington ground squirrel.

Although located along an existing disturbance corridor, the Horn Butte Alternative and the western portion of the Proposed Action would introduce additional disturbance to an area located directly adjacent to protected core habitat (Boardman Grasslands Important Bird Area / Conservation Area). Habitat and breeding colonies in these areas are protected from impacts, such as hunting and introduction of invasive species, which are prevalent in surrounding habitats. The Longhorn Variation adjacent to and east of the Boardman Bombing Range and directly west of active agriculture fields is also along an existing disturbance corridor. Because the Bombing Range provides additional primary habitat, and existing populations are relatively protected from impacts such as hunting pressure and mammalian predation; direct, indirect and cumulative impacts related to installation of additional infrastructure would be expected to be moderate to high along this route. Due to its proposed location and the amount of suitable habitat available within the area (110,936 acres), the Hornbutte Alternative would be expected to have the highest impacts to Washington ground squirrel. The Longhorn Alternative is located east and north of the other alternatives, and, although mapped as having a higher shrubland vegetative component within mapped Washington ground squirrel suitable habitat (Figure 3-16), Google Earth (2013) mapping shows agricultural use within the immediate area. While the highest percentage of suitable habitat (34.9) impacted by the right-of-way is estimated for this alternative, habitat may be less suitable then projected. The Longhorn Alternative may have the lowest overall impacts, of all the alternatives, to Washington ground squirrel.

Because there would be a permanent loss of primary habitat for the Washington ground squirrel, and there is potential for mortality of individuals from direct and indirect effects, the Proposed Action and all alternatives in Segment 1 would result in moderate to high long-term impacts to the Washington ground squirrel. The effects determination for all alternatives, except for the Hornbutte Alternative, is 'MIIH' - *May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.* The effects determination for the Horn Butte Alternative is 'WIFV' - *Will Impact Individuals or Habitat with a Consequence that the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species*.

Special Status Species

The amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 1 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

Special status species utilizing shrubland habitats in Segment 1 include species mentioned in the Affected Environment Section; common nighthawk, burrowing owl, Swainson's hawk, pallid bat and Washington ground squirrel (Table 3-57). Although common nighthawks often forage at dusk, outside of typical construction operation schedules, they are known to forage diurnally during the nesting season. The presence of construction equipment and noise associated with project operations may disrupt common nighthawk foraging during the breeding season. Loss of vegetation associated with shrubland habitats could also have an effect on food availability. Because the nighthawk does not nest in shrubland habitats project activities would not have an effect on the breeding and nesting behaviors of this species. Construction of transmission lines within foraging habitat may result in collision mortality for these birds. Indirect effects to the shrubland species, such as the common nighthawk, may include the introduction and spread of noxious weeds associated with newly constructed access roads, increasing the potential for human caused fire. An increase in fire potential and fire frequency could result in a loss of foraging habitat while the vegetation recovers. Increases in noxious weeds and fire frequency could also cause permanent changes in vegetation structure and composition resulting in a loss of foraging habitat. Because indirect effects would last longer than 3 years, and because mortality of special status shrubland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 1 could result in long-term moderate impacts to special status shrubland species.

Direct effects to special status grassland species in Segment 1 could include behavioral disturbances to ground-nesting birds, such as bobolink and long billed curlew (Table 3-57). Construction activities during nesting season may prevent birds from utilizing existing habitat for breeding and could cause birds to abandon nest sites. Due to the cryptic nature of ground nests, human activities in nesting habitat could damage nests or cause mortality to nestlings and fledglings. Loss of vegetation cover could result in a loss of nesting habitat for these birds. Vegetation removal in grassland habitat may also result in a loss of foraging habitat for bobolink, long billed curlew, common night hawk, and pallid bat. Project activities in grassland habitat adjacent to occupied roosting habitat for pallid bats may cause behavioral disturbances causing bats to abandon daytime roosts, hibernacula, or maternity colonies. Indirect effects on special status grassland species include the effects common to all wildlife described above. In addition, the presence of the transmission line and associated structures may provide additional roosting structures for raptors and corvids, thus increasing their presence in Segment 1. Species such as bobolink, long billed curlew, pallid bat, and white-tailed jackrabbit would be vulnerable to increased predation. Species such as the long billed curlew, which prefers tall grass habitat, could be affected by noxious weed infestations that have the potential to change habitat structure within the grasslands. Because indirect effects would last longer than 3 years, and because mortality of special status grassland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 1 could result in long-term moderate impacts to special status grassland species.

Wetland/riparian habitat is highly limited in Segment 1 (approximately 5 to 13 acres, depending on alternative and appears to be dominated by invasive species and juniper woodland assoicated with man made water features. However, due to the xeric conditions in the general area, these uncommon features are still utilized by wildlife and would be considered important habitat features. Special status species utilizing wetland/riparian habitats in Segment 1 are described in Table 3-57. Potential effects to wetland/riparian amphibian and invertebrate species include; impacts to water quality due to soil erosion and sedimentation associated with construction of the transmission line and associated facilities, as well as construction (short-term) and maintenance (long-term) of access roads. Effects to special status birds could include a loss of both nesting and foraging habitat due to construction operations. Removal of dying trees and dead snags in wetland / riparian areas could impact nesting and foraging habitat for amphiians, birds and small mammals. Construction activities could discourage nesting activity during the breeding season due to increased human presence and loud noise from equipment operations. Indirect effects would last longer than 3 years, and mortality of special status wetland/riparian species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action and all alternatives in Segment 1 could result in long-term moderate impacts to special status wetland/riparian species. Timing restrictions and design criteria should decrease some of these impacts.

Migratory Birds Including Raptors

Migratory birds and raptors known to be or potentially present in the analysis areas for the Proposed Action and alternatives in Segment 1, along with the habitat types used by each species, are listed in Table 3-57, Table 3-58, and Table 3-59. As described previously, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 1 is compared by alternative in Table 3-40 in Vegetation Section 3.2.3.

There would be some impacts on migratory birds and game birds, including BLM Species of Conservation Concern and USFWS Birds of Conservation Concern during construction. These impacts could include collisions with construction vehicles, powerlines, other equipment, or structures; direct removal of nesting habitat; destruction of unoccupied nests; induced abandonment of nests due to disturbance; fugitive dust; noise and visual disturbance. There is unlikely to be measurable impacts to any non-sensitive migratory bird populations, but there would be some impact to individuals and habitat.

Noise during Project construction could impact migratory birds by masking auditory communication, such as individuals defending territory or trying to attract a mate, flock members making contact calls, nestlings begging for food, or alarm calls (Parris and Schneider 2008). These impacts could have an effect on reproductive success or survival. Nesting birds are particularly sensitive to disturbance, and some disturbance could lead to nest failure or abandonment.

Removal of trees would impact both present and future habitat for cavity-nesting birds, such as woodpeckers and bluebirds. Snags are a vital habitat element for many species, and removal of snags, plus the removal of mature trees that would become snags, would decrease nesting substrate for these species.

The Proposed Action and alternatives would pass through suitable habitat for a number of raptor species. Though numerous raptor species are known to nest and utilize habitat within Segment 1, other raptor species have the potential to migrate, stop-over, have seasonal occurrence, or utilize certain habitats for movement from one area to another such as bald eagles, osprey and peregrine falcon. The most common habitat types are agriculture and shrublands. Common raptor species that occur in these major habitat types and affected habitat from the Proposed Action and alternatives are described below.

Direct impacts on raptors during construction could include collision with Project structures, electrocution, disturbance due to construction noise, fugitive dust, and visual disturbance. Raptors are particularly sensitive to disturbance during the nesting period and some construction activities could cause nest failure or abandonment. Adherence to project design criteria, including timing restrictions, should decrease some of these impacts.

Potential indirect effects to raptors could include increased non-Project-related, unauthorized human activity along the right-of-way and Project roads, which could add to the intensity of disturbance within the Analysis Area. Disturbance from this could render some areas temporarily unsuitable as raptor habitat. This could be especially critical during the nesting season; at this time, disturbance could be sufficient to scare a raptor from its nest or disrupt brooding or feeding. Increased human presence could also increase the risk of fire, which would alter raptor habitat and prey populations, and possibly injure eggs or chicks. The impacts to habitat and small mammals described above, including habitat loss and edge effects, brought about by vegetation alterations and removal could lead to a change in plant species composition, potentially lowering the quality of habitat for raptors and/or their prey and the population size and robustness. Decreased prey for raptors will likely have direct and negative implications for the condition and trend of raptor populations.

Transmission line towers may also increase raptor nest site availability and alter raptor distribution on the landscape. Steenhof et al. (1993) found that 133 pairs of raptors and ravens (*Corvus corax*) nested along a 500kV transmission line in Idaho in 11 years of initial construction, and 82 percent of pairs nested on the power line during successive years. Ferruginous hawks (*Buteo regalis*), red-tailed hawks (*B. jamaicensis*) and great horned owls (*Bubo virginianus*) are known to nest on transmission towers (Gilmer and Wiehe 1977). Ferruginous hawks were the most common raptor nesting in the towers. Great horned owls were observed using abandoned ferruginous nests in the following breeding season (Gilmer and Wiehe 1977).

It is difficult to determine whether nesting raptors benefit from an increase in nest site availability as a result of transmission tower construction. For example, continuous, long-term electric and magnetic field (EMF) exposure can affect reproductive success of species such as the American kestrel (*Falco sparverius*); increasing fertility, egg size, embryonic development, and fledging success, but reducing hatching success (Fernie et al. 2000; Fernie and Reynolds 2005). Furthermore, species such as ferruginous hawks can increase nesting and fledgling success in artificial nest sites compared to natural sites (Tigner et al. 1996).

Because removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect), the Proposed Action and all alternatives in Segment 1 could result in long-term moderate impacts to migratory birds.

Big Game

Table 3-67 identifies the amount of mule deer and elk winter range that would be impacted by the Proposed Action and all alternatives in Segment 1. This table also lists the acreage of existing access roads and the acreage of new access roads that would be constructed in winter range for mule deer and elk.

Direct impacts to big game from Project construction could include vehicle collisions, noise, habitat loss, and visual disturbance, which is a change in the viewshed of the animal that is perceived as alarming. Vegetation clearing has the potential to alter big game designated winter and parturition range. Alterations on winter range could remove forage that is already scarce during this time of year. However, for this Project, vegetation clearing in general is not expected to negatively impact big game appreciably due to the small amount of habitat affected compared to the large home ranges of these species, and because the cleared areas would still provide forage as they recover.

Noise and visual disturbance associated with increased human activity could displace big game from preferred areas. These disturbances could potentially alter migratory activities during construction. Displacement of big game from winter areas during sensitive periods could also occur. This displacement could affect over-winter survival on winter range by causing animals to mobilize stored bodily energy reserves that are needed to survive the winter when food is scarce.

Indirect effects on big game from Project construction would include fugitive dust, increased human activity, and habitat alteration. Increased unauthorized (non-Project-related) human activity along the right-of-way and Project-related roads could cause increased disturbance to big game. This could temporarily render habitat where activity is occurring unsuitable and could increase energetic demands on animals as they move away from the disturbance. This could be especially problematic if it occurred on designated winter range areas during critical times of year. An increase in unauthorized human presence in the Analysis Area could also potentially lead to increased harvest of big game and an increased risk of fire, which would alter habitat for big game.

Response to disturbed right-of-way sites differs between big game species. Activity of big game species in the right-of-way can be low compared to adjacent habitat, while the tendency for animals to cross a right-of-way can be a function of species response to disturbance (Sopuk and Vernam 1985) as well as right-of-way characteristics such as width (Willyard et al. 2004).

Table 3-67. Big Game Habitat, Segment 1—Morrow–Umatilla

Alternative	Total Miles	Mule Deer Winter Range					Elk Winter Range				
		Analysis Area acres	Within ROW acres	Percent of Habitat Disturbed Within ROW	Existing Roads acres	New Roads acres	Analysis Area acres	Within ROW acres	Percent of Habitat Disturbed Within ROW	Existing Roads acres	New Roads acres
Proposed Action	86.9	12,802	264	2%	13	26	13,200	306	2%	10	28
Horn Butte Alternative	80.3	—	—	—	—	—	—	—	—	—	—
Longhorn Alternative	71.2	—	—	—	—	—	—	—	—	—	—
Longhorn Variation	75.2	—	—	—	—	—	—	—	—	—	—

Table Note: ROW = right-of-way

Large ungulates can be attracted to right-of-ways by increased forage potential (Willyard et al. 2004), potentially due to vegetation reclamation efforts. Travel patterns of wide-ranging carnivores also can be positively influenced by roads and trails (Paquet and Carbyn 2003). Therefore rates of predation could increase as a result of behavioral response to Project features. Access roads may facilitate increased hunting and poaching pressures on big game (Gaines et al. 2003).

Because modification of big game winter range and disturbance during a critical or sensitive period could occur, the Proposed Action and all alternatives in Segment 1 could result in long-term moderate impacts to big game.

Segment 2—Blue Mountains

Wildlife Habitat

The majority of habitat that would be impacted in Segment 2 is woodland/forest habitat followed by shrubland habitat. The amount of each primary wildlife habitat type that would be disturbed within the right-of-way for the alternative in Segment 2 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

Forests and woodlands cleared during construction would be impacted for much longer than other habitat types. This impact would displace wildlife that use forests and woodlands for many generations until vegetation can recover. In addition, due to the greater potential for edge effects where this habitat type is cleared compared to the other habitat types, forest/woodlands adjacent to cleared areas would be impacted as well. Though mature forests are rare, the impacts to this forest type, such as edge effects, would be more pronounced due to the more distinct difference between mature forest and adjacent cleared areas, and the longer recovery time of this type of habitat (several decades). Wildlife species that use this habitat type, for example northern goshawk and American three-toed woodpecker, would experience habitat loss until areas re-grow during Project operations, in this case, several decades. Removing trees would cause the loss of both present habitat (canopy cover, live trees, forest understory) and potential future habitat (snags and downed wood from dead, mature trees). Woodland/forest habitat support diverse assemblages of wildlife species, often including species that are specific to that habitat type. Because forests and woodlands support a wide range of species and are slow to regenerate, the Proposed Action and alternative in Segment 2 would result in long-term high impacts to this habitat type.

The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and alternative in Segment 2 would result in long-term high impacts to this habitat type.

Federally Proposed, Endangered, Threatened and Candidate Species

Greater Sage-Grouse

Temporary and permanent modification of suitable Greater Sage-Grouse habitat would occur as a result of the Proposed Action and alternative in Segment 2. A small amount of PGH would be directly and indirectly affected by the Proposed Action and alternative in Segment 2 and is identified in

Table 3-68. No leks, PPH, core areas, or low density areas would be directly or indirectly affected by the Proposed Action or the alternative in Segment 2 (Table 3-68). The distances to evaluate for indirect effects from access roads (i.e., 0.2 mile) and the transmission line (i.e., 0.6 mile) were chosen in coordination with ODFW, and according to the guidelines established in ODFW's Mitigation Framework. A description of the general types of direct and indirect effects to Greater Sage-Grouse is provided in the Segment 3.

Permanent loss of Greater Sage-Grouse PGH in Segment 2, and the potential for mortality of individuals from indirect effects from the Proposed Action and alternative would result in long-term high impacts.

Special Status Species

As described above in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 2 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

Special status species utilizing forest/woodland habitats in Segment 2 include species such as Lewis' woodpecker, flammulated owl, olive-sided flycatcher, American marten, gray wolf, long-legged myotis, and Johnson's hairstreak (Table 3-57). Direct effects to special status birds in woodlands/forest habitat within Segment 2 could include a loss of both nesting and foraging habitat due to construction operations. Woodpecker species found within this segment are primary and secondary cavity nesters and forage by gleaning insects from tree trunks and bark. Removal of timber, old growth timber, dying trees, and dead snags would result in a loss of woodlands/forest habitat for these species. Construction activities could discourage nesting activity during breeding season due to increased human interaction and noise from equipment operations.

Behavioral disturbance and displacement of special status mammals such as the American marten, North American wolverine (dispersal habitat only), and gray wolf due to construction noise, presence of humans, and construction equipment would occur during construction operations. In the analysis area, human disturbance could permanently displace gray wolves from denning and foraging sitesAccess road and transmission line construction and operation could alter habitat, reducing cover and affecting species ability to forage and shelter in existing habitats. Direct effects to forest dwelling bats include behavioral disturbance and displacement of roosting bats during construction activities. Myotis species are likely to abandon roosts and hibernacula due to human disturbance causing disorientation and potentially resulting in individual mortality. Bats may be killed by collisions with the transmission line and other project features during the operation of the transmission line.

Table 3-68. Greater Sage-Grouse Leks and Habitat, Segment 2

		Analysis Area			Within Right-of-Way for Transmission Line [1] and Access Roads			Percent Disturbed Within Right-of-Way			Within 0.6 Mile of Transmission Line [1]			Within 0.2 Mile of Existing Access Roads			Within 0.2 Mile of New or Improved Access Roads		
Alternative	**Route Length (miles)**	**Leks (no.)**	**PPH [2] (acres)**	**PGH [3] (acres)**	**Leks (no.)**	**PPH [2] (acres)**	**PGH [3] (acres)**	**Leks**	**PPH [2]**	**PGH [3]**	**Leks (no.)**	**PPH [2] (acres)**	**PGH [3] (acres)**	**Leks (no.)**	**PPH [2] (acres)**	**PGH [3] (acres)**	**Leks (no.)**	**PPH [2] (acres)**	**PGH [3] (acres)**
Proposed Action	45.6	—	—	8,159 [—]	—	—	17 [—]	0%	0%	<1% [—]	—	—	458 [—]	—	—	152 [—]	—	—	374 [—]
Glass Hill Alternative	45.6	—	—	8,159 [—]	—	—	17 [—]	0%	0%	<1% [—]	—	—	458 [—]	—	—	152 [—]	—	—	374 [—]

Table Notes: Dashes (—) throughout table indicate “zero” number (no.) of leks or “zero” habitat acreage affected. [1] “Transmission line” includes associated support facilities. [2] The acreage of core areas is the same as the acreage of preliminary priority habitat (PPH). [3] Where the acreage of low-density areas differs from preliminary general habitat (PGH), the acreage of low-density areas is specified in brackets.

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Indirect effects to special status birds in woodland/forest habitat in Segment 2 include habitat fragmentation resulting from construction of the transmission line, access roads, and other project facilities. Fragmentation caused by the transmission line or access roads could create a barrier to foraging movements and isolate individuals within the habitat. Additionally, access roads may increase potential for noxious weed infestations and could increase the frequency of human-caused fires. It is unlikely that the transmission line in this habitat type will increase raptor predation on the special status species. Loss of canopy cover, increased potential for noxious weed infestation, and potential for increased fire regime may cause habitat degradation and abandonment of wildlife habitat.

Because direct and indirect effects would last longer than 3 years, and because mortality of special status forest/woodland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and alternative in Segment 2 could result in long-term moderate impacts to special status species that use forest/woodland habitat.

Special status species utilizing shrubland habitats in Segment 2 include species such as common nighthawk, golden eagle, Greater Sage-Grouse, and pallid bat (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize shrubland habitats in Segment 1. Because direct and indirect effects would last longer than 3 years, and because mortality of special status shrubland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and the alternative in Segment 2 could result in long-term moderate impacts to special status shrubland species.

Special status species utilizing wetland/riparian habitats in Segment 2 include; Columbia spotted frog (population outside Great Basin), Woodhouse's toad, Lewis' woodpecker, silver-bordered fritillary, and western ridged mussel (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize wetland/riparian habitats in Segment 1. Indirect effects would last longer than 3 years, and mortality of special status wetland/riparian species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action and alternative in Segment 2 could result in long-term moderate impacts to special status wetland/riparian species.

Migratory Birds Including Raptors

Migratory birds and raptors known to be or potentially present in the analysis areas for the Proposed Action and alternative in Segment 2, along with the habitat types used by each species, are listed in Table 3-58 and Table 3-59. As described in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 2 is compared to the alternative in Table 3-43 in Vegetation Section 3.2.3. Refer to the complete description of direct and indirect effects to migratory birds described in Segment 1. Because removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect), the Proposed Action and alternative in Segment 2 could result in long-term moderate impacts to migratory birds.

Big Game

Table 3-69 identifies the amount of mule deer and elk winter range that would be impacted by the Proposed Action and alternative in Segment 2. This table also lists the acreage of existing access roads and the acreage of new access roads that would be constructed in winter range for mule deer and elk under each alternative. Refer to the complete description of direct and indirect effects to big game described in Segment 1. Because modification of big game winter range and disturbance during a critical or sensitive period could occur, the Proposed Action and alternative in Segment 2 could result in long-term moderate impacts to big game.

Table 3-69. Big Game Habitat, Segment 2

Alternative	Total Miles	Mule Deer Winter Range					Elk Winter Range				
		Analysis Area (ac)	Within ROW (ac)	% of Habitat Disturbed Within ROW	Existing Roads (ac)	New Roads (ac)	Analysis Area (ac)	Within ROW (ac)	% of Habitat Disturbed Within ROW	Existing Roads (ac)	New Roads (ac)
Proposed Action	45.6	28,995.50	712.09	2%	41	42	37,995.22	901.77	2%	58	53
Glass Hill Alternative	45.6	28,891.21	711.35	2%	56	42	37,625.55	901.03	2%	73	52

Segment 3—Baker Valley

Wildlife Habitat

The majority of habitat that would be impacted in Segment 3 is shrubland habitat followed by forest/woodland habitat. The amount of each primary wildlife habitat type that would be disturbed within the right-of-way for each alternative in Segment 3 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and all alternatives in Segment 3 would result in long-term high impacts to this habitat type.

The types of direct and indirect effects that could occur to forest/woodland habitat are described in Segment 2. Because forests/woodlands support a wide range of species and are slow to regenerate, the Proposed Action and all alternatives in Segment 3 would result in long-term high impacts to this habitat type.

Federally Proposed, Endangered, Threatened, and Candidate Species

Greater Sage-Grouse

The USFWS identified several potential direct impacts on Greater Sage-Grouse related to transmission lines including (1) mortality due to electrocution and collision with structures and conductors, (2) habitat fragmentation due to presence of tall stuctures, clearing of vegetation, and presence of electric and magnetic fields (EMF), and (3) direct loss of habitat due to clearing of vegetation (USFWS 2010). Other direct effects on Greater Sage-Grouse related to the construction of the transmission line that could occur include potential disturbance of birds during sensitive breeding and wintering periods.

Transmission lines can cause Greater Sage-Grouse mortality through bird collisions with transmission lines and facilitate predation by raptors. Transmission structures and communication towers may also provide nesting sites for corvids and raptors in habitats with low vegetation and relatively flat terrain (Ellis 1984; Steenhof et al. 1993; Johnson et al. 2011). Under the Proposed Action and alternatives, introduction of the transmission line into Greater Sage-Grouse habitat could increase the potential for individual Greater Sage-Grouse mortality as a result of collisions with construction vehicles, in-flight collisions with transmission lines or towers, and electrocution due to contact with energized electrical infrastructure. However, the potential for electrocution of Greater Sage-Grouse due to interactions with the proposed transmission line is nonexistent. The spacing between conductors of the transmission line would be much larger than the species wingspan and all proposed substation expansions (where spacing between energized components is often reduced) associated with the project would be located outside of Greater Sage-Grouse habitat.

Potential for Greater Sage-Grouse mortality due to collisions with the proposed transmission line and towers are also low. Factors influencing avian transmission line collisions include the location and configuration of transmission lines, species-specific tendencies for collision, and environmental conditions, including weather, topography, and habitat (Avian Power Line Interaction Committee [APLIC] 2006). Greater Sage-Grouse are unlikely to collide with the proposed transmission line due to their tendency for short, low flights and the elevation of the proposed conductors. Greater Sage-Grouse are large birds that fly near the ground and have poor maneuvering capabilities. Therefore, Greater Sage-Grouse have the potential to strike transmission line towers while in flight. Collision with transmission line towers has been observed in similarly structured birds, such as prairie chickens. Additionally, if guyed structures are required in Greater Sage-Grouse habitat, collisions with guy wires could occur, and should be marked to aid in avoiding collision.

Effects due to construction activities within Greater Sage-Grouse habitat could include removal of vegetation used by Greater Sage-Grouse for nesting, foraging, and escape cover. Removal of vegetation and placement of transmission line structures could fragment and reduce the connectivity of Greater Sage-Grouse habitat in the project area.

Greater Sage-Grouse experts and agency personnel have raised concerns that Greater Sage-Grouse may avoid areas that contain tall structures (Braun 1998, Braun et al. 2002, Pruett et al. 2009) and areas adjacent to transmission lines due to the presence of EMFs near the line (USFWS 2010b). Peer-reviewed studies of the effects of tall structures and EMFs on habitat use by Greater Sage-Grouse are limited. Published studies on species with similar life history to the Greater Sage-Grouse, including the lesser (*Tympanuchuspallidicinctus*) and greater (*Tympanuchuscupidolesser*) prairie chickens, indicated avoidance of areas where tall structures exist within prairie chicken habitat. These studies concluded that new transmission lines could lead to avoidance of previously suitable habitat and serve as barriers to movement in prairie chickens (Pruett et al. 2009). If the conclusions presented in these studies are indicative of impacts on Greater Sage-Grouse, construction of a new overhead transmission line could result in fragmentation and decreased carrying capacity of habitats that become isolated as a result of construction of the transmission line. However, prairie chickens and Greater Sage-Grouse differ in morphology, behavior, seasonal habitat use, and distribution. These differences require that caution be exercised when comparing their individual and population responses to tall structures (UDNR 2010).

Increased EMFs have been shown to alter the behavior of avian species, though species vary in their sensitivity to this disturbance (Fernie and Reynolds 2005). Peer-reviewed studies regarding Greater Sage-Grouse reactions to EMFs are not available. The potential effect of the proposed Project on EMFs is described in Section 3.2.12. If Greater Sage-Grouse avoid EMFs created by transmission lines, the effects are likely to be similar to those described as potentially occurring as a result of introduction of tall structures.Greater Sage-Grouse could be disturbed by construction noise and human and equipment presence during sensitive breeding, brood-rearing, and wintering periods. Disturbances during the breeding and brood-rearing period could cause a decrease in reproductive success and recruitment to Greater Sage-Grouse populations. Disturbances to Greater Sage-Grouse in winter habitats may cause additional expenditure of individual birds' energy and displace grouse into less suitable habitats, resulting in decreased reproductive fitness, increased mortality, and decreases in population size. Studies have shown that Greater Sage-Grouse that attend leks up to 11 miles from disturbance may be affected by the loss of seasonal habitat functionality (Connelly et al. 2000). To minimize disturbance to Greater Sage-Grouse, Greater Sage-Grouse-specific mitigation measures would be developed prior to publication of the Final EIS.

The USFWS also identified potential indirect impacts including (1) increased predation from raptors and ravens along transmission lines and (2) degradation of habitat due to spread of non-native plants and noxious weeds. In addition to these effects, alteration of wildland fire frequency in sage-grouse habitats in the Project area could affect sage-grouse as a result of the construction, operation, and maintenance of a new transmission line.

Increased predation of Greater Sage-Grouse by raptors and ravens could result due to construction of the transmission line. Tall structures provide attractive hunting perches for raptors and ravens in areas where vegetation is low and terrain is relatively flat (Connelly et al. 2000). Studies in Wyoming found leks in proximity to transmission lines have lower annual recruitment of individual birds when compared to leks farther from these lines. The difference was presumed to be a result of raptor predation (Braun et al. 2002). Raptors and ravens are known to prey on nesting and foraging Greater Sage-Grouse in addition to Greater Sage-Grouse on leks. Increases in predation on Greater Sage-Grouse due to introduction of tall structures could result in losses of individual birds and impact local population sizes. Ellis (1984) found the frequency of raptor-Greater Sage-Grouse interactions increased 65 percent and golden eagle interactions alone increased 47 percent between pre- and post-transmission line comparisons. Coates and Delehanty (2010) used video monitoring at 55 active nests to identify predators of depredated nests (n=516). They found that increased raven numbers negatively affect Greater Sage-Grouse nest survival, especially where there is relatively low shrub canopy cover.

Construction activities could increase the potential for introduction and spread of non-native plants and noxious weeds in Greater Sage-Grouse habitats. The potential spread of noxious weeds as a result of ground disturbance during construction under all action alternatives would be minimized through the development of a Reclamation, Re-vegetation, and Weed Management Plan. Invasive plants such as cheatgrass (*Bromus tectorum*) and conifer expansion can reduce or eliminate vegetation used by Greater Sage-Grouse for food and cover and do not provide quality Greater Sage-Grouse habitat (Connelly et al. 2011a). Invasion of non-native plants and noxious weeds also can increase fire frequency in sagebrush habitats, converting previously suitable areas into unsuitable habitat. Degradation of Greater Sage-Grouse habitat due to invasion of non-native plants and noxious weeds could lead to decreased survival of individual birds within affected populations and reduction in habitat-carrying capacity.

Introduction of new access roads that could be used by the public and potential spread of non-native and invasive plants in Greater Sage-Grouse habitats could increase fire frequency in the project area. Sagebrush species important for Greater Sage-Grouse survival are killed by fire and habitats require decades to recover. Prior to re-establishment of sagebrush cover, these sites are of limited or no use to Greater Sage-Grouse (Connelly et al. 2000). More frequent fires in Greater Sage-Grouse habitats as a result of construction of the transmission line, access roads, and alteration of vegetation communities could result in reduced local Greater Sage-Grouse population size and reduction of suitable habitat available for the species.

New and improved access roads also have the potential to increase human activity and traffic rates that can displace Greater Sage-Grouse. Traffic rates are not anticipated to change on the improved access roads for this Project. However, new roads could create access to areas previously inaccessible for human use. ODFW's Mitigation Framework identifies a disturbance band of 0.2 mile on each side of access roads with low traffic volumes (0–2 vehicles per 24 hours) be analyzed for impacts and to calculate mitigation acres for low density and non-core Greater Sage-Grouse habitats in Oregon.

Knick et al. (2013) documented a relationship between the density of anthropogenic features in the landscape and Greater Sage-Grouse lek persistence. This relationship is central to the NTT recommendation to limit surface disturbance due to anthropogenic development to less than 3 percent. Anthropogenic features traversing and on the periphery of the Baker Greater Sage-Grouse population include urban, ex-urban, and rural development, agricultural lands, airport and landing strips, Interstate 84, several Oregon State Highways and major roads, wind energy facilities, and miles of distribution and transmission powerlines. Though not finalized, the Oregon Sub-Region Greater Sage-Grouse Draft RMPA/EIS is expected to propose a surface disturbance cap, as required under IM 2012-044.

Short- and long-term, direct and indirect impacts on Greater Sage-Grouse and their habitat would occur as a result of the Proposed Action and all alternatives in Segment 3. The number of leks and the amount of PPH and PGH that would be directly and indirectly affected by the Proposed Action and all alternatives in Segment 3 are identified in Table 3-70.

The Proposed Action would have the greatest direct and indirect effects on Greater Sage-Grouse due to the greatest loss of PPH/Core and additional PGH habitat, and potential disturbance to several leks within the Proposed Actions area of influence. Although the Timber Canyon Alternative would have a relatively large amount of direct and indirect effects to PGH, no PPH/Core or leks would be affected. The Flagstaff and Burnt River Mountain Alternatives would have direct and indirect effects that are intermediate between the Proposed Action and the Timber Canyon Alternative. However, these alternatives in combination form the agency and environmentally preferred route and would have relatively lower amounts of direct and indirect impacts to Greater Sage-Grouse and their habitat compared to the Proposed Action.

Permanent loss of Greater Sage-Grouse habitat in Segment 3, and the potential for mortality of individuals and lek abandonement from indirect effects from the Proposed Action and alternatives would result in long-term high impacts.

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Table 3-70. Greater Sage-Grouse Leks and Habitat, Segment 3

Alternative	Route Length (miles)	Analysis Area (i.e., Within 5 Miles of Transmission Line [1])			Within ROW for Transmission Line [1] and Access Roads			Percent of Analysis Area that Would be Disturbed Within ROW			Within 0.6 Mile of Transmission Line [1]			Within 0.2 Mile of Existing Access Roads			Within 0.2 Mile of New or Improved Access Roads		
		Number of Leks	PPH [2] (acres)	PGH [3] (acres)	Number of Leks	PPH [2] (acres)	PGH [3] (acres)	Leks	PPH [2]	PGH [3]	Number of Leks	PPH [2] (acres)	PGH [3] (acres)	Number of Leks	PPH [2] (acres)	PGH [3] (acres)	Number of Leks	PPH [2] (acres)	PGH [3] (acres)
Proposed Action	55.7	40	144,198	62,084 [45,353]	—	916	590 [544]	0%	1%	1% [1%]	2	21,954	12,028 [12,442]	1	5,182	2,905 [2,997]	2	13,904	8,849 [8,118]
Timber Canyon Alternative	70.9	13	107,589	109,293 [83,966]	—	0	942 [785]	0%	0%	1% [1%]	0	4,917	20,716 [19,412]	0	6,570	1,862 [3,645]	0	5,900	18,927 [16,765]
Flagstaff Alternative, including 230-kV Rebuild	56.6	33	128,504	62,084 [41,353]	—	577	705 [581]	0%	<1%	1% [1%]	1	14,903	13,109 [12,470]	0	4,385	2,905 [2,620]	1	19,000	9,405 [8,404]
Burnt River Mountain Alternative	55.7	37	130,504	54,626 [38,912]	—	655	465 [414]	0%	1%	1% [1%]	2	16,585	8,748 [9,231]	1	2,615	2,403 [2,403]	2	9,374	6,748 [6,464]

Table Notes: Dashes (—) throughout table indicate "zero" number of leks or "zero" habitat acreage affected. [1] "Transmission line" includes associated support facilities. [2] The acreage of core areas is the same as the acreage of preliminary priority habitat (PPH). [3] Where the acreage of low-density areas differs from preliminary general habitat (PGH), the acreage of low-density areas is specified in brackets.

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Special Status Species

As described above in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 3 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

The majority of habitat impacted in Segment 3 is shrubland habitat. Special status species utilizing shrublands in Segment 3 include species such as common nighthawk, golden eagle, Greater Sage-Grouse, and pallid bat (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status shrubland species in Segment 1. Because direct and indirect effects would last longer than 3 years, and because mortality of special status shrubland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to special status shrubland species.

Special status species utilizing forest/woodland habitats in Segment 3 includes species such as American three-toed woodpecker, flammulated owl, olive-sided flycatcher, American marten, gray wolf, long-legged myotis, and intermountain sulphur (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize forest/woodland habitats habitats in Segment 2. Because direct and indirect effects would last longer than 3 years, and because mortality of special status forest/woodland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to special status species that use forest/woodland habitat.

Special status species utilizing wetland/riparian habitats in Segment 3 include Columbia spotted frog (population outside Great Basin), Woodhouse's toad, silver-bordered fritillary, and western ridged mussel (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize wetland/riparian habitats in Segment 1. Indirect effects would last longer than 3 years, and mortality of special status wetland/riparian species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to special status wetland/riparian species

Migratory Birds Including Raptors

Migratory birds and raptors known to be present or with potential habitat in the analysis areas for the Proposed Action and alternatives in Segment 3, along with the habitat types used by each species, are listed in Table 3-59. Estimates for theamount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 3 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3. Also refer to the complete description of direct and indirect effects to migratory birds described in Segment 1. Removal or disturbance to nesting sites for migratory birds and raptors could occur. Indirect effects could cause mortality of migratory birds (with no population-level effect), the Proposed Action and all alternatives in Segment 2 could result in long-term moderate impacts to migratory birds.

Big Game

Table 3-71 identifies the amount of mule deer winter range, elk winter range, and bighorn sheep occupied habitat that would be impacted by the Proposed Action and all alternatives in Segment 3. This table also lists the acreage of existing access roads and the acreage of new access roads that would be constructed in winter range for mule deer and elk, and in occupied habitat for bighorn sheep, under each alternative. Refer to the complete description of direct and indirect effects to big game described in Segment 1. Because modification of big game winter range and disturbance during a critical or sensitive period could occur, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to big game.

Segment 4—Brogan Area

Wildlife Habitat

The majority of habitat that would be impacted in Segment 4 is shrubland habitat followed by grassland habitat. The amount of wildlife habitat that would be disturbed within the right-of-way for each alternative in Segment 4 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and all alternatives in Segment 4 would result in long-term high impacts to this habitat type.

The types of direct and indirect effects that could occur to grassland habitat are described in Segment 1. Because grassland habitats provide value to wildlife and regenerate quickly following disturbance, the Proposed Action and all alternatives in Segment 4 would result in short-term moderate impacts to this habitat type.

Federally Proposed, Endangered, Threatened and Candidate Species

Columbia Spotted Frog

Temporary and permanent modification of suitable Columbia spotted frog habitat (Northern and Great Basin DPS overlap) would occur as a result of the Proposed Action and all alternatives in Segment 4. Short term effects, from project activities in wetlands /riparian areas / open water to Columbia spotted frog could include; direct mortality during construction and ground disturbing activities, displacement, increased downstream sedimentation and erosion at breeding sites, removal of habitat (changes in water turbidity and temperature), noise-related disturbance during the breeding season. Long term effects would include habitat removal and habitat fragmentation / loss of connectivity.

Because there would be a temporary impact and permanent loss of habitat for the Columbia spotted frog, and there is potential for mortality of individuals from direct and indirect effects, the Proposed Action and all alternatives in Segment 4 would result in long-term high impacts to the Columbia spotted frog.

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Table 3-71. Big Game Habitat, Segment 3

		Mule Deer Winter Range					Elk Winter Range					Bighorn Sheep Occupied Habitat				
Alternative	Total Miles	Analysis Area (acres)	Within Right-of-Way (acres)	% of Habitat Disturbed Within Right-of-Way	Existing Roads (acres)	New Roads (acres)	Analysis Area (acres)	Within Right-of-Way (acres)	% of Habitat Disturbed Within Right-of-Way	Existing Roads (acres)	New Roads (acres)	Analysis Area (acres)	Within Right-of-Way (acres)	% of Habitat in Analysis Area Disturbance	Existing Roads (acres)	New Roads (acres)
Proposed Action	55.7	31,178	766	2%	55	48	5,648	107	2%	2	5	0	0	0%	0	0
Timber Canyon Alternative	70.9	46,403	1,103	2%	81	67	55,518	1,257	2%	109	81	0	0	0%	0	0
Flagstaff Alternative	56.6	35,107	876	2%	60	53	5,541	—	0%	2	5	0	0	0%	0	0
Burnt River Mountain Alternative	55.7	34,993	872	2%	55	48	8,753	203	2%	7	10	168	0	0%	0	0

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Greater Sage-Grouse

Short- and long-term, direct and indirect impacts on Greater Sage-Grouse and their habitat would occur as a result of the Proposed Action and all alternatives in Segment 4. The amount of PPH and PGH that would be directly and indirectly affected by the Proposed Action and all alternatives in Segment 4 are identified in Table 3-72. The general types of direct and indirect effects that could occur to Greater Sage-Grouse are described above in Segment 3.

Anthropogenic features traversing and on the periphery of the Northern Great Basin Greater Sage-Grouse population in Segment 4 include rural development, agricultural lands, airport and landing strips, Interstate 84, an Oregon State Highway and major roads, and miles of distribution and transmission powerlines. Though not finalized, the Oregon Sub-Region Greater Sage-Grouse Draft RMPA/EIS is expected to propose a surface disturbance cap, as required under IM 2012-044.

The Proposed Acton would have the greatest direct and indirect effects on Greater Sage-Grouse due to the greatest loss of PPH/Core and additional PGH habitat. The Tub Mountain South Alternative which is also the agency and environmentally preferred alternative would have a relatively large amount of direct and indirect effects to PGH, very little PPH would be affected. The Willow Creek Alternative would have direct and indirect effects that are intermediate between the Proposed Action and the Tub Mountain South Alternative. No leks are expected to be affected by the Proposed Action or any of the alternatives. Nevertheless, permanent loss of Greater Sage-Grouse habitat in Segment 4, and the potential for mortality of individuals from indirect effects from the Proposed Action and alternatives would result in long-term high impacts.

Special Status Species

Each primary wildlife habitat that would be disturbed within the right-of-way in Segment 4 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

The majority of habitat impacted in Segment 4 is shrubland habitat. Special status species utilizing shrublands in Segment 4 include; common nighthawk, golden eagle, Greater Sage-Grouse, and pallid bat (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status shrubland species in Segment 1. Because shrubland habitat regenerates slowly (much longer than 3 years), and because mortality of special status shrubland species without population-level effects, fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to special status shrubland species.

Special status species utilizing grasslands in Segment 4 include species such as bobolink, common nighthawk, long billed curlew, pallid bat, and white-tailed jackrabbit (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status grassland species in Segment 1. Because indirect effects would last longer than 3 years, and because mortality of special status grassland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to special status grassland species.

Special status species utilizing wetland/riparian habitats in Segment 4 include species such as Columbia spotted frog (Great Basin population and population outside Great Basin), Woodhouse's toad, Lewis' woodpecker, and western ridged mussel (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize wetland/riparian habitats in Segment 1. Indirect effects would last longer than 3 years, and mortality of special status wetland/riparian species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to special status wetland/riparian species.

Migratory Birds Including Raptors

Migratory birds and raptors with known occurrence or habitat within the Analysis Area are listed in Table 3-58 and Table 3-59. The amount of each primary wildlife habitat that would be disturbed within the ROW in Segment 4 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3. Refer to the complete description of direct and indirect effects to migratory birds described in Segment 1. Because removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect), the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to migratory birds.

Big Game

Table 3-73 identifies the amount of mule deer, elk, and pronghorn winter range that would be impacted by the Proposed Action and all alternatives in Segment 4. This table also lists the acreage of existing access roads and the acreage of new access roads that would be constructed in winter range for mule deer, elk, and pronghorn under each alternative. Refer to the complete description of direct and indirect effects to big game described in Segment 1. Because modification of big game winter range and disturbance during a critical or sensitive period could occur, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to big game.

Table 3-72. Greater Sage-Grouse Leks and Habitat, Segment 4

Alternative	Route Length (miles)	Analysis Area (Within 5 Miles of Transmission Line [1])			Within Right-of-Way for Transmission Line [1] and Access Roads			Percent Disturbed Within ROW			Within 0.6 Mile of Transmission Line [1]			Within 0.2 Mile of Existing Access Roads			Within 0.2 Mile of New or Improved Access Roads		
		Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks	PPH [2]	PGH [3]	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)
Proposed Action	49	29	135,235	120,465 [90,258]	—	618	653 [651]	0%	<1%	1% [1%]	—	15,378	15,995 [9,430]	—	3,514	4,843 [2961]	—	13,255	8,813 [4,147]
Proposed 138/69-kV Rebuild	5.3	2	7,249	31,214 [26,759]	—	—	19	0%	0%	<1%	—	—	1,147 [1,147]	—	—	—	—	—	530 [530]
Tub Mountain South Alternative	49.4	10	42,612	138,911 [57,128]	—	208	911 [705]	0%	<1%	1% [1%]	—	3,657	21,729 [11,290]	—	719	6,608 [1018]	—	1,995	10,857 [310]
Willow Creek Alternative	43.4	15	75,512	117,836 [82,026]	—	469	524 [732]	0%	1%	<1% [1%]	—	11,381	13,209 [11,764]	—	3,124	3,076 [1107]	—	6,231	8,394 [1,727]

Table Notes: Dashes (—) throughout table indicate "zero" number (no.) of leks or "zero" habitat acreage affected. [1] "Transmission line" includes associated support facilities. [2] The acreage of core areas is the same as the acreage of preliminary priority habitat (PPH). [3] Where the acreage of low-density areas differs from preliminary general habitat (PGH), the acreage of low-density areas is specified in brackets.

Table 3-73. Big Game Habitat, Segment 4

Alternative	Total Miles	Mule Deer Winter Range					Elk Winter Range					Pronghorn Winter Range				
		Analysis Area	Acres of Habitat	% of Habitat Disturbed Within Right-of-Way	Acres of Existing Roads	Acres of New Roads	Analysis Area	Acres of Habitat	% of Habitat Disturbed Within Right-of-Way	Acres of Existing Roads	Acres of New Roads	Analysis Area	Acres of Habitat	% of Habitat Disturbed Within Right-of-Way	Acres of Existing Roads	Acres of New Roads
Proposed Action	49	40,575	921	2%	88	63	46,786	1,195	3%	79	79	1,162	52	4%	14	5
Proposed 138/69-kV Rebuild	5	7,947	64	1%	6	6	3,994	14	0%	2	2	390	0	0%	0	0
Tub Mountain South Alternative	49	51,460	1,248	2%	54	71	10,692	301	3%	37	49	9,820	98	1%	17	31
Willow Creek Alternative	43	42,907	1,025	2%	67	65	36,851	893	2%	44	58	3,243	92	3%	11	10

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Segment 5—Malheur

Wildlife Habitat

The majority of habitat that would be impacted in Segment 5 is shrubland habitat followed by grassland habitat. The amount of wildlife habitat that would be disturbed within the right-of-way for each alternative in Segment 5 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and all alternatives in Segment 5 would result in long-term high impacts to this habitat type.

The types of direct and indirect effects that could occur to grassland habitat are described in Segment 1. Because grassland habitats provide value to wildlife and regenerate quickly following disturbance, the Proposed Action and all alternatives in Segment 5 would result in short-term moderate impacts to this habitat type.

Federally Proposed, Endangered, Threatened, and Candidate Species

Columbia Spotted Frog

Existing suitable habitat within the Analysis Area (1220 acres) for Columbia spotted frog varies in quality and effectiveness. As discussed in the Affected Environment section, values estimated for wetland acreages may include additional features, such as ephemeral streams and canals, not utilized by spotted frogs. Efforts were made to avoid siting construction activities and infrastructure (powerline strcutures, substations,multi-use yards) within or adjacent to wetlands and open water habitat. Mitigation requirements will also require creation of suitable replacement wetland areas for any impacted sites. In addition, any wetland or ponded areas with suitable spotted frog habitat will be surveyed, during the appropriate time frame, prior to construction activities (Wildlife PRC-18). Documented locations will be buffered and appropriate mitigative measures will be utilized to reduce impacts.

Although there may be temporary impacts, including direcft mortality, and some permanent loss of habitat in very limited areas for the Columbia spotted frog, it was determined that impacts resulting from the Proposed Action and all alternatives in Segment 5 ‘MIIH’ - *May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species* (Table 3-74).

Table 3-74. Summary of Effects by Alternative to Columbia Spotted Frog (Great Basin DPS) in Segment 5

Proposed Alternatives by County	Analysis Area (Total Acres of Wetlands,Riparian, Open Water)	Columbia Spotted Frog Suitable Habitat	
		Acres of suitable habitat within ROW	Effects Determinations [1]
Proposed Action (Malheur County)	306 (1.2%)	13	MIIH
Double Mountain	288 (1.1%)	11	MIIH
Malheur A	315 (1.2%)	11	MIIH
Malheur S	311 (1.1%)	12	MIIH

Table Note: [1] MIIH = May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species

Greater Sage-Grouse

Short- and long-term, direct and indirect impacts on Greater Sage-Grouse and their habitat would occur as a result of the Proposed Action and all alternatives in Segment 5. The amount of PPH and PGH that would be directly and indirectly affected by the Proposed Action and all alternatives in Segment 5 are identified in Table 3-75. The general types of direct and indirect effects that could occur to Greater Sage-Grouse are described above in Segment 3.

Anthropogenic features traversing and on the periphery of the Northern Great Basin Greater Sage-Grouse population in Segment 5 are relatively limited. Though not finalized, the Oregon Sub-Region Greater Sage-Grouse Draft RMPA/EIS is expected to propose a surface disturbance cap, as required under IM 2012-044.

The Malheur A Alternative followed closely by the Malheur S Alternative would have the greatest direct and indirect effects on Greater Sage-Grouse due to the greatest loss of PPH/Core and additional PGH habitat. The Double Mountain Alternative would have some direct and indirect effects to PGH, but effects from the Proposed Action which is also the agency and environmentally preferred would be very similar and equally low. No PPH or leks are expected to be affected by the Proposed Action or any of the alternatives. Nevertheless, permanent loss of Greater Sage-Grouse habitat in Segment 5, and the potential for mortality of individuals from indirect effects from the Proposed Action and alternatives would result in long-term high impacts.

Special Status Species

As described above in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 5 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.

The majority of habitat impacted in Segment 5 is shrubland habitat. Special status species utilizing shrublands in Segment 5 include species such as common nighthawk, golden eagle, Greater Sage-Grouse, and pallid bat (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status shrubland species in Segment 1. Because direct and indirect effects would last longer than 3 years, and because mortality of special status shrubland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to special status shrubland species.

Special status species utilizing grasslands in Segment 5 include species such as bobolink, common nighthawk, long billed curlew, pallid bat, and white-tailed jackrabbit (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status grassland species in Segment 1. Because direct and indirect effects would last longer than 3 years, and because mortality of special status grassland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur, the Proposed Action and all alternatives in Segment 5 could result in short-term moderate impacts to special status grassland species.

Special status species utilizing wetland/riparian habitats in Segment 5 include species such as Columbia spotted frog (Great Basin population), Woodhouse's toad, Lewis' woodpecker, and western ridged mussel (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize wetland/riparian habitats in Segment 1. Indirect effects would last longer than 3 years, and mortality of special status wetland/riparian species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to special status wetland/riparian species.

Migratory Birds Including Raptors

Migratory birds and raptors known to be or potentially present in the analysis areas for the Proposed Action and alternatives in Segment 5, along with the habitat types used by each species, are listed in Table 3-58 and Table 3-59. As described above in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 5 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3. Refer to the complete description of direct and indirect effects to migratory birds described in Segment 1. Because removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect), the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to migratory birds.

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Table 3-75. Greater Sage-Grouse Leks and Habitat, Segment 5

Alternative	Route Length (miles)	Within 5 Miles of Transmission Line [1]			Within ROW for Transmission Line [1] and Access Roads			Percent Disturbed Within ROW			Within 0.6 Mile of Transmission Line [1]			Within 0.2 Mile of Existing Access Roads			Within 0.2 Mile of New or Improved Access Roads		
		Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks	PPH [2]	PGH [3]	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)	Leks (no.)	PPH [2] (acres)	PGH [3] (acres)
Proposed Action	40.1	1	0	61,947 [9,472]	0	0	252 [0]	0%	0%	<1% [0%]	0	0	6,786 [0]	0	0	1,041 [0]	0	0	3,036 [0]
Malheur S Alternative	43.2	4	0	139,637 [42,481]	0	0	595 [135]	0%	0%	<1% [<1%]	0	0	15,216 [4,079]	0	0	3,400 [1,182]	0	0	9,936 [2,066]
Malheur A Alternative	42.8	4	0	141,855 [42481]	0	0	692 [163]	0%	0%	<1% [<1%]	0	0	17,523 [4,079]	0	0	3,510 [1,182]	0	0	10,390 [2066]
Double Mountain Alternative	40.1	1	0	66,360 [0]	0	0	0 [0]	0%	0%	0% [0%]	0	0	6,796 [0]	0	0	1,041 [0]	0	0	3,036 [0]

Table Notes: Dashes (—) throughout table indicate “zero” number (no.) of leks or “zero” habitat acreage affected. [1] “Transmission line” includes associated support facilities. [2] The acreage of core areas is the same as the acreage of preliminary priority habitat (PPH). [3] Where the acreage of low-density areas differs from preliminary general habitat (PGH), the acreage of low-density areas is specified in brackets. Asterisk (*) indicates that acreage includes 8.45 acres classified as "historic water."

Big Game

Table 3-76 identifies the amount of mule deer, elk, and pronghorn winter range that would be impacted by the Proposed Action and all alternatives in Segment 5. This table also lists the acreage of existing access roads and the acreage of new access roads that would be constructed in winter range for mule deer, elk, and pronghorn under each alternative. Refer to the complete description of direct and indirect effects to big game described in Segment 1. Because modification of big game winter range and disturbance during a critical or sensitive period could occur, the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to big game.

Table 3-76. Big-Game Habitat, Segment 5

Alternative	Total Miles	Mule Deer Winter Range					Elk Winter Range					Pronghorn Winter Range				
		Analysis Area	Acres of Habitat	% of Habitat Disturbed Within ROW	Acres of Existing Roads	Acres of New Roads	Analysis Area	Acres of Habitat	% of Habitat Disturbed Within ROW	Acres of Existing Roads	Acres of New Roads	Analysis Area	Acres of Habitat	% of Habitat Disturbed Within ROW	Acres of Existing Roads	Acres of New Roads
Proposed Action	40	37,273	862	2%	49	52	0	0	0%	0	0	7,414	334	5%	15	21
Malheur S Alternative	43	21,501	741	3%	74	52	0	0	0%	0	0	8,509	373	4%	44	29
Malheur A Alternative	43	29,888	721	2%	79	41	0	0	0%	0	0	9,610	422	4%	46	30
Double Mountain Alternative	40	35,587	830	2%	48	49	0	0	0%	0	0	2,275	180	8%	22	24

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SEGMENT 6—TREASURE VALLEY

Wildlife Habitat

The majority of habitat that would be impacted in Segment 6 is shrubland habitat. The amount of each primary wildlife habitat type that would be disturbed within the right-of-way for the Proposed Action in Segment 6 is listed in Table 3-43 in Vegetation Section 3.2.3.

The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action in Segment 6 would result in long-term high impacts to this habitat type.

Federally Proposed, Endangered, Threatened and Candidate Species

Columbia Spotted Frog

Although there is 71 acres of suitable habitat in the Analysis Area, the majority of project activities will occur outside of these areas and impacts to spotted frog and associated habitat are expected to be negligible (Table 3-77), with a determination of “NI’ – *No Impact*. Additional suitable habitat may be available but appears to be limited within the Analysis Area. Any wetland or ponded areas with suitable spotted frog habitat will be surveyed, during the appropriate time frame, prior to construction activities (Wildlife PRC-18). Documented locations will be buffered and appropriate mitigative measures will be utilized to reduce impacts.

Table 3-77. Summary of effects to Columbia spotted frog (Great Basin DPS) in Segment 6

Proposed Alternatives	Analysis Area (Total acres of Wetlands,Riparian, Open Water)	Columbia spotted frog suitable habitat	
		Acres of suitable habitat within ROW	Effects Determinations [1]
Proposed Action	71 (0.5%)	4 (1%) [2]	NI

Table Note: [1] NI = No Impact; [2] Percent within right-of-way.

Greater Sage-Grouse

Short- and long-term, direct and indirect impacts on Greater Sage-Grouse and their habitat would occur as a result of the Proposed Action in Segment 6. The amount of PGH that would be directly and indirectly affected by the Proposed Action in Segment 6 are identified in Table 3-78. The general types of direct and indirect effects that could occur to Greater Sage-Grouse are described above in Segment 3.

The types of anthropogenic features traversing and on the periphery of the Northern Great Basin Greater Sage-Grouse population in Segment 6 are similar to those described in Segment 3. However, Segment 6 is located on the periphery of the heavily populated Treasure Valley which has essentially eliminated Greater Sage-Grouse use nearby and movements through the ROW. Though not finalized, the Oregon Sub-Region Greater Sage-Grouse Draft RMPA/EIS is expected to propose a surface disturbance cap, as required under IM 2012-044.

No PPH or leks are expected to be affected by the Proposed Action. Nevertheless, permanent loss of Greater Sage-Grouse habitat in Segment 6 from the Proposed Action would result in long-term high impacts.

Special Status Species

As described above in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 6 is listed in Table 3-43 in Vegetation Section 3.2.3.

The majority of habitat impacted in Segment 6 is shrubland habitat. Special status species utilizing shrublands in Segment 6 include species such as black-throated sparrow, Brewer's sparrow, prairie falcon, and pygmy rabbit (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status shrubland species in Segment 1. Shrubland habitat regenerates slowly, and indirect effects would last longer than 3 years. In addition, mortality of special status shrubland species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action in Segment 6 could result in long-term moderate impacts to special status shrubland species.

Special status species utilizing wetland/riparian habitats in Segment 6 include species such as Columbia spotted frog (Great Basin population), Woodhouse's toad, Lewis' woodpecker, and Owyhee springsnail (Table 3-57). Direct and indirect effects to these species would be similar to those described for special status species that utilize wetland/riparian habitats in Segment 1. Indirect effects would last longer than 3 years, and mortality of special status wetland/riparian species (without population-level effects), fragmentation, and disturbance during critical or sensitive periods could occur. Therefore, the Proposed Action in Segment 6 could result in long-term moderate impacts to special status wetland/riparian species.

Migratory Birds Including Raptors

Migratory birds and raptors known to be or potentially present in the analysis areas for the Proposed Action in Segment 6, along with the habitat types used by each species, are listed in Table 3-58 and Table 3-59. As described above in the Wildlife Habitat section, the amount of each primary wildlife habitat that would be disturbed within the right-of-way in Segment 6 is listed in Table 3-43 in Vegetation Section 3.2.3. Refer to the complete description of direct and indirect effects to migratory birds and raptors described in Segment 1. Because removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect), the Proposed Action in Segment 6 could result in long-term moderate impacts to migratory birds and raptors.

Table 3-78. Greater Sage-Grouse Leks and Habitat, Segment 6

Alternative	Route Length (miles)	Within 5 Miles of Transmission Line [1]			Within ROW for Transmission Line [1] and Access Roads			Percent Disturbed Within ROW			Within 0.6 Mile of Transmission Line [1]			Within 0.2 Mile of Existing Access Roads			Within 0.2 Mile of New or Improved Access Roads		
		Leks (no.)	PPH (acres)	PGH (acres)	Leks (no.)	PPH (acres)	PGH (acres)	Leks	PPH	PGH	Leks (no.)	PPH (acres)	PGH (acres)	Leks (no.)	PPH (acres)	PGH (acres)	Leks (no.)	PPH (acres)	PGH (acres)
Proposed Action	23.8	0	37,135	27,608	—	—	231	0%	0%	1%	—	—	4,651	—	—	51	—	78	2,767

Table Abbreviations: No. = number; PGH = preliminary general habitat; PPH = preliminary priority habitat.

Table Notes: Dashes (—) throughout table indicate “zero” number of leks or “zero” habitat acreage affected. [1] “Transmission line” includes associated support facilities.

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Big Game

Table 3-79 identifies the amount of mule deer winter range and bighorn sheep population management units that would be impacted by the Proposed Action in Segment 6. While bighorn sheep lambing areas and core herd home ranges are present within the vicinity of the Proposed Action, these areas would not be impacted. Table 3-79 also lists the acreage of existing access roads and the acreage of new access roads that would be constructed in mule deer winter range and bighorn sheep population management units. Refer to the complete description of direct and indirect effects to big game described in Segment 1. Because modification of big game winter range and disturbance during a critical or sensitive period could occur, the Proposed Action in Segment 6 could result in long-term moderate impacts to big game.

Table 3-79. Big-Game Habitat, Segment 6

Alternative	Total Miles	Mule Deer Winter Range					Bighorn Sheep Population Management Units				
		Analysis Area	Acres of Habitat	% of Habitat Disturbed Within Right-of-Way	Acres of Existing Roads	Acres of New Roads	Analysis Area	Acres of Habitat	% of Habitat Disturbed Within Right-of-Way	Acres of Existing Roads	Acres of New Roads
Proposed Action	23.8	5,820	128	2%	18	6	18,370	528	3%	61	23

Design Features

As part of the Proposed Action, and as described in the Revised POD, IPC has developed 12 framework plans that include proposed design features and measures to reduce or avoid environmental impacts. These design features, which are listed in Appendix C, have been proposed to ensure environmental protection during construction, operations, and maintenance of the B2H Project. Measures that have been proposed to reduce impacts on wildlife include:

- SW-1—A SWPPP and ESCP would be created and implemented to cover construction related ground disturbing activities associated with this project. The SWPPP and ESCP would specify Best Management Practices (BMPs) that would be implemented in order to minimize sediment and other pollutants from impacting waters of the U.S.
- SW-2—A storm water team would be assembled to manage construction storm water issues, conduct the required inspections, provided guidance to construction crews, and maintain and update the SWPPP and ESCP as needed.
- SW-3—The SWPPP and ESCP would identify areas with critical erosion conditions that may require special construction activities or additional Best Management Practices (BMPs) to minimize soil erosion and would be modified as necessary to account for changing construction conditions and schedules.

- SW-4—Temporary and permanent BMPs would be used to control erosion, sediment and other pollutants associated with construction related activities. BMPs would be installed and maintained until disturbed areas meet final stabilization criteria.
- SW-5—Damaged temporary erosion and sediment control structures would be repaired in accordance with the SWPPP and ESCP.
- SW-6—Upon completion of construction, permanent erosion and sediment BMPs would be installed in accordance with the SWPPP and ESCP.
- SPC-1—A spill prevention containment countermeasures (SPCC) plan would be prepared and implemented as applicable for this project and would detail protective measures to prevent and contain oil and other petroleum products spills and leaks.
- SPC-2—Construction spills would be promptly cleaned up and contaminated materials would be transported to a disposal site that meets local, state, and federal requirements.
- SPC-3—Fueling areas within staging area would be contained. If fueling is conducted in other areas along the right-of-way, BMPs would be implemented to prevent spills.
- SPC-4—If a spill occurs which is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor would be identified and available to further contain and clean up the spill.
- SPC-5—For spills in standing water absorbent materials would be used as appropriate by the contractor to recover and contain released materials on the surface of the water. If the standing water is considered a water of the state, it would be reported immediately to the appropriate agency.
- SPC-6—If pre-existing contamination is encountered during operations, work would be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party (if identifiable); and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.
- SPC-7—Any oil spill to waters of the state/US are reportable. Oil spill notification is required for spills on land of 25 gallons or greater in Idaho. In Oregon, an oil spill on land of 42 gallons or greater requires notification. Notification is required for hazardous material spills of reportable quantities (quantities are listed in the Code of Federal Regulations).
- SPC-8—Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes would be located in upland areas away from streams or wells.
- SPC-9—Pumps and temporary fuel tanks for the pumps would be stored in containment.
- SPC-10—Hazardous material would not be drained on to the ground or into streams or drainage areas. Totally enclosed containment would provided for all Project generated trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.
- SPC-11—Refueling and storing potentially hazardous materials would not occur within a 100-foot radius of a water body, and 200-foot radius of all identified private water wells, and a 400-

foot radius of all identified municipal or community water wells. Spill preventive and containment measures or practices would be incorporated as needed.

- REC-1—Qualified company personnel and contractors would facilitate avoidance of noxious weed infestations where possible and identify new infestations (see Appendix G of the Construction POD).
- REC-2—Preconstruction weed treatments would be limited to areas expected to have unavoidable ground-disturbing activities and have potential to spread weeds due to construction activities. Treatments would be conducted prior to the start of ground-disturbing activities. Preconstruction treatment may include (but is not limited to) using mechanical control and herbicides. The Reclamation Plan would discuss control options. It would also include appropriate times for pre-construction noxious weed treatments based on phased in-services dates for line segments.
- REC-3—All herbicide applications would comply with label restrictions, federal, state and/or county regulation, and landowner agreements. No spraying would occur prior to notification and approval from the applicable land management agency or landowner. Private property would be sprayed only if written approval is obtained. State and federal herbicide recording requirements would be followed, including BLM and Forest Service recording requirements. The Reclamation Plan would contain a list of approved herbicides, target species and application times and rates.
- REC-4—Herbicides may be applied using a broadcast applicator mounted on a truck or all-terrain vehicle (ATV), backpack sprayers, or other sprayers as conditions dictate. Herbicide applications would be conducted by licensed operators or under the supervision of a licensed operator in accordance with state laws and BLM and USFS weed policies.
- REC-5—Herbicide use near special status species and water bodies would follow label requirements; state and federal law; and BLM and USFS recommendations.
- REC-6—Project vehicles and equipment would arrive at the job site clean of soil and herbaceous material. When project vehicles demobilize from the job sites where noxious weeds are present, they would use appropriate decontamination measures as defined in the Reclamation Plan.
- REC-7—Project-related storage and staging yards, fly yards, and other areas subject to regular long-term disturbance would be treated for noxious weeds when construction activity levels allow.
- REC-8—If topsoil is removed, care would be taken to ensure it is not mixed with the underlying subsoil. Topsoil would be stored in a separate stockpile. It would be returned to the area it was taken from and would not be spread in adjacent areas. If topsoil is not suitable for backfill, then it would be spread in another previously disturbed area or transported to a predetermined offsite disposal area.
- REC-10—Straw, hay, mulch, gravel, seed and other imported materials must be certified weed-free. If certified weed-free materials are not available then alternative materials would be used with agency approval.
- REC-14—Reclamation seeding methods would include broadcast seeding, drill seeding or hydro seeding/hydro mulching (or a combination of methods). Seeding methods would be chosen based on the type of seed, disturbance level, soil type, terrain and precipitation levels

for the area to be reclaimed. Seed mixtures and seeding methods would be reviewed and approved by the land management agency or private land owner. A reclamation and revegetation plan identifying reclamation stipulations would be developed and incorporated in the POD.

- REC-15—Final cleanup would ensure all construction areas are free of construction debris including—but not limited to—assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices would be left in place.
- TR 9—All temporary culverts and associated fill material would be removed from stream crossings after construction, and banks would be re-contoured and restored to their pre-disturbance conditions.
- OM-5—The Agencies may restrict general public access to closed federal or state roads and service roads that IPC maintains. In cases of restricted access, IPC would physically close the road with a gate. Gates would be locked with an IPC lock and a federal-agency lock. This would be updated to reflect current road closures and gate locations as necessary.
- OM-6—Before beginning an O&M project on federal or state land, IPC or its contractors shall comply with all appropriate Reclamation EPMs as appropriate to prevent the spread of noxious weeds.
- OM-7—To help limit the spread and establishment of noxious-weed species in disturbed areas, desired vegetation needs to be established promptly after disturbance. IPC would rehabilitate significantly disturbed areas as soon as possible after ground-disturbing O&M activities and during the optimal period. IPC would not reseed areas within a 25-foot radius around structures to minimize potential damage from wildland fires. IPC would treat and reseed disturbed areas in accordance with the approved reclamation plan (Appendix G of the POD).
- OM-8—If noxious-weed species occur within IPC's right-of-way as a result of IPC activities, IPC would coordinate treatment with the BLM, USFS, or other land owner as applicable. Treatments would be in compliance with BLM and USFS land use plans and guidance. When determining whether treatment is necessary and whether it would produce the desired results, IPC would consider surrounding site conditions and whether weed-control activities would be conducted by other parties. IPC is only responsible for controlling noxious weeds to pre-disturbance levels.
- OM-9—Routine and corrective O&M activities in streams with sensitive fish species would be conducted within the designated in-water work periods for each particular stream.
- OM-10—Woody vegetation management within 100 feet of streams would be completed by hand crews.
- OM-12—During O&M activities IPC would use existing stream crossings or new, permanent crossings that were approved as part of the Project, and IPC would not create additional crossings without prior agency permitting and approval.
- OM-13—Only herbicides approved by the land-managing agency as safe to use in aquatic environments and reviewed by IPC for effectiveness would be used within 100 feet of aquatic resources.
- OM-14—Sensitive plant or wildlife populations that occur within or adjacent to the right-of-way and work areas would be marked on the ground, where practical, to ensure they are avoided. If

species are discovered during work, IPC would establish a spatial buffer zone and immediately contact the appropriate land-managing agency. Unless IPC is informed otherwise, work outside the buffer area would continue. If IPC needs to work within the buffer area, it would work with the appropriate land-managing agency to develop a mutually acceptable solution that allows the work to be completed within the scheduled outage window and/or in a timely manner. After the project is complete or no longer poses a threat to the plant populations, any marking would be promptly removed to protect the site's significance and location from unwanted attention.

- OM-15—If any sensitive plants or wildlife species require relocation, permission would be obtained from the appropriate land management agency and others as required.
- OM-16—If sensitive wildlife species are killed or injured due to construction or O&M activities, the appropriate land management agency and the Oregon Department of Fish and Wildlife (ODFW) would be notified.
- OM-17—Nesting, roosting, and perching birds—especially osprey—can cause power outages if their feces or nesting materials interfere with conductors, insulators, or air gaps. IPC, in consultation with the USFWS, manages nesting on distribution line structures to reduce conflicts. Such management may include relocating nests, modifying structures, and providing nesting platforms. IPC would continue to consult with the USFWS and the appropriate land management agency when a problem nest is located.
- OM-18—For purposes of compliance with the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act of 1940, IPC would adhere to its Avian Protection Plan (March 2011) that provides protocols for minimizing electrocution and collision events and managing nests, including the protection of nests during vegetation management activities.
- OM-19—Reseed significantly disturbed areas with a non-invasive seed mix approved by the land-managing agency or property owner.
- OM-20—Employ appropriate interim erosion and/or sediment control measures if seeding cannot immediately take place.
- OM-22—Use certified weed-free seed mixes and cover materials.
- OM-29—O&M activities shall comply with all requirements of the approved Fire Protection and Suppression Plan.
- PRC 1—Seasonally, big game winter range and critical bighorn sheep lambing areas would be avoided during construction.
- PRC 2—No construction activities would take place in crucial elk winter range between November 15 and March 15.
- PRC 3—No construction activities would take place in crucial mule deer winter range between November 15 and March 15.
- PRC 4—Identified bald eagle nest sites within 0.75 mile of transmission line construction (access roads, tower platforms, and lay-down yards) would be surveyed for occupancyfrom April 1 to May 15. If a site is occupied, a seasonal restriction would be enacted through August 1. Two additional surveys of occupied sites would be conducted between June 15 and July 15 to determine success of nest site. If a nest site is not active (failed) by May 15, the seasonal restriction would be removed and construction can commence.

- PRC 5—Suitable burrowing owl (nesting) habitat, or identified nesting areas would be surveyed for active burrowing owl nest sites between March 1 and April 15 within 0.50 miles from construction sites. If an active nest site is located, a seasonal closure would be enacted, starting March 1 and ending August 1. Two additional surveys of occupied sites would be conducted by May 1 and June 15 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction would be removed and construction can commence.
- PRC 6—Suitable ferruginous hawk nesting habitat, or identified nesting areas would be surveyed for active ferruginous hawk nest sites between March 1 and April 1 within 0.25 miles from construction sites. If an active nest site is located, a seasonal closure would be enacted, starting March 15 and ending August 1. Two additional surveys of occupied sites would be conducted by May 1 and July 1 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction would be removed and construction can commence.
- PRC 7—Suitable golden eagle nesting habitat, or identified nesting areas would be surveyed for active golden eagle nest sites between February 15 and April 15 within 0.75 miles from construction sites. If an active nest site is located, a seasonal closure would be enacted, starting March 15 and ending July 15. Two additional surveys of occupied sites would be conducted by May 1 and June 15 to determine success of nest site. If a nest site is not active (failed) by May 1, the seasonal restriction would be removed and construction can commence.
- PRC 8—Special status species, threatened and endangered species would be considered in accordance with management policies set forth by appropriate land-management agencies (i.e. BLM, USFS, USFWS, ODFW, IDFG, etc.). This would entail conducting pre-construction surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities as agreed on by the agencies. In cases where such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat. These actions may include altering the placement of roads or towers, where practicable as approved by the landowner and compliance inspection contractor, as well as monitoring activities, implementation of Project speed limits and other restrictions.
- PRC 9—Apply seasonal and spatial restrictions for blasting for sensitive wildlife species, such as Greater Sage-Grouse, raptors, and migratory birds.
- PRC 10—Avoid activities that could result in new noise levels at the perimeter of a lek above 10 dBA from 6:00 p.m. to 8:00 a.m. during the breeding season (March 1 – May 31).
- PRC 11—In areas where corvid nesting and associated predation on sage-grouse nests and broods is a concern, consider methods to discourage nesting. This may include use of nest minimizing designs (e.g., monopoles, single crossarms, etc.) for new construction, or retrofitting existing structures where there is an identified problem nest.
  - Nest removal activities should be limited to those nests that pose a problem/risk (risk to birds or potential power outage), and as authorized by state and/or federal permits.
  - Removal of nest material may be necessary multiple times during nest building to discourage corvids (ravens) from nesting on power poles. Nest material removal may also be most effective when done in conjunction with other methods to discourage corvid nesting.
  - Migratory bird permits (e.g., utility SPUT permits) would typically authorize only the removal of inactive nests or active nests (excluding eagles and threatened/endangered species) that

pose a safety, operational, or fire risk. Utilities should contact the USFWS and their state wildlife agency to determine if removal of an active corvid nest would be authorized.

- PRC 12—Identify and implement seasonal timing stipulations/restrictions for construction work. Consult federal land use plans and state sage-grouse conservation plans and/or strategies for specific dates and times. In the absence of specific dates and times:
  - Avoid active leks from 6:00 p.m. through 8:00 a.m. during the breeding ('lekking') season.
  - Breeding ('lekking')/Nesting season: 1 March – 31 May.
  - Brood-rearing season: 15 May – 31 July.
  - Winter Concentration Areas (WCA) or identified winter range: 1 December – 28 February.
- PRC 13 - Where priority sage-grouse habitat cannot be avoided, implement no-disturbance buffers around leks and nesting habitat during breeding/ nesting season.
- PRC 14—Minimize disturbance/removal of vegetation beneficial to sage-grouse (e.g. sage brush, forbs, and native grasses) in priority habitat by:
  - Siting staging areas out of priority habitat and minimize size/footprint of staging areas.
  - Siting pulling locations outside of priority habitat.
  - Siting equipment storage outside of priority habitat.
  - Minimizing development of new access roads by utilizing existing roads.
  - Upgrading roads to the minimum extent necessary.
  - Managing project access roads to limit public use in priority habitats.
- PRC 15—Close exposed tower foundation holes at the end of the work day to prevent sage-grouse or other wildlife from falling in and becoming trapped.
- PRC 16—In areas located within 2 kms of occupied leks, mark fences in high risk areas (for collision) with permanent flagging or other suitable deterrents. Identify and remove unnecessary fencing within 2 kms of occupied leks, within the analysis area.
- PRC 17—In Greater Sage-Grouse PPH, vehicles will be limited to existing roads to prevent damage to Greater Sage-Grouse nesting areas.
- PRC 18—Any wetland or ponded areas with suitable Columbia spotted frog (DPS) habitat will be surveyed, during the appropriate time frame, prior to construction activities or any activities potentially impacting spotted frog habitat.
- PRC 19—Pre-construction surveys will be conducted in suitable habitat to identify exact locations of Washington ground squirrel colonies prior to contruction activities. If colonies are identified, appropriate mitigation measures will be utilized (i.e. relocation, timing restrictions).
- Migratory Birds (PAC-1)—Avoid tree or shrub trimming and/or removal during the primary avian breeding season (April 1 – July 15), especially in sensitive habitat (i.e., riparian). Upland habitat suitable to nesting migratory birds would be surveyed prior to ground clearing between April 1 and July 15 for active nests. A 100 foot no construction buffer around active nests would be implemented. No seasonal restrictions would be imposed on clearing upland habitat between July 15 and February 15. Ground clearance in riparian habitats would be allowed between

August 1 and March 30, with the exception of a seasonal constraint for impacts to fisheries resources.

- PAC-2—Federal wildlife staff would be consulted for any modifications to the preferred route or changes in the location of Project features resulting in construction locations outside of the surveyed areas. Areas would be assessed and documented according to the protocols and methods defined in the construction POD.
- MIS-1—Suitable northern goshawk nesting habitat, or identified nesting areas would be surveyed for active northern goshawk nest sites between March 15 and May 15 within 0.75 miles from construction sites. If an active nest site is located, a seasonal closure would be enacted, starting March 15 and ending August 1. Two additional surveys of occupied sites would be conducted between June 1 and July 1 to determine success of nest site. If a nest site is not active (failed) by May 15, the seasonal restriction would be removed and construction can commence. Survey crews will wear appropriate PPE while conducting northern goshawk breeding season surveys.

RESIDUAL EFFECTS

Impacts to resources will be addressed by implementation of design features, where applicable. These design features are meant to reduce project impacts to the lowest level possible. In some cases, the implementation of design features may not significantly reduce the level of effect, resulting in residual effects. The summary of residual effects is provided in Table 3-80. Additional protection measures are outlined in the Operations and Maintenance Framework and the POD. Residual effects to wildlife habitat are the same as residual effects to the primary vegetation communities discussed in Vegetation Section 3.2.3 and are not discussed here. Residual effects are the same for the Proposed Action and all alternatives so no distinction is made among alternatives.

Table 3-80. Residual Effects on Wildlife

Resource	Type of Impact	Intensity of Initial Impact	Design Features Applied	Residual Effect
Columbia spotted frog	Mortality, soil erosion, sedimentation, habitat modification, fragmentation	Moderate	SW-4, SW-5, SW-6, OM-10, OM-12, OM-14, OM-15, OM-16, OM-20, PRC-8, PRC-18	Low
Greater Sage-Grouse	Mortality, noise disturbance, human presence, disruption of breeding & foraging behaviors, habitat loss & modification, fragmentation, predation	High	OM-14, OM-15, OM-16, PRC-8, PRC-9, PRC-10, PRC-11, PRC-12, PRC-13, PRC-14, PRC-15, PRC-16, PRC-17	High
Washington ground squirrel	Mortality, noise disturbance, human presence, habitat loss & modification, predation	High	PRC-8, OM-14, OM-15, OM-16	High
Special status species	Mortality, noise disturbance, human presence, disruption of breeding & foraging behavior, habitat loss & modification, fragmentation and loss of connectivity	Moderate	PRC-4, PRC-5, PRC-6, PRC-7, PRC-8, PRC-9, OM-14, OM-15, OM-16,	Moderate

Resource	Type of Impact	Intensity of Initial Impact	Design Features Applied	Residual Effect
Management indicator species	Mortality, noise disturbance, human presence, disruption of breeding & foraging behavior, habitat loss & modification, fragmentation and loss of connectivity	Moderate	MIS-1, PRC-2	Moderate
Migratory birds including raptors	Mortality, noise disturbance, human presence, disruption of foraging behavior, habitat loss & modification, fragmentation	Moderate	OM-14, OM-15, OM-16, OM-17, OM-18, PRC-4, PRC-5, PRC-6, PRC-7, PRC-8, PRC-9, PAC-1, PAC-2	Moderate
Big game (elk, mule deer, bighorn sheep, pronghorn)	Mortality, noise disturbance, human presence, disruption of foraging behavior, habitat loss & modification, fragmentation and loss of connectivity	Moderate	PRC-1, PRC-2, PRC-3, OM-16	Moderate

3.2.4.7 Mitigation Planning

According to the Draft Compensatory Mitigation Plan (CMP) (Appendix D), resources with a high residual impact will require compensatory mitigation. Mitigation may occur in the form of additional conservation actions that include acquisition and preservation of habitat/vegetation communities and restoration or enhancement of vegetation communities. All compensatory mitigation will follow the guidelines in the Draft and Final CMP.

For Greater Sage-Grouse, ODFW's Mitigation Framework (2012) identifies a disturbance band of 0.2 mile on each side of access roads with low traffic volumes (0–2 vehicles per 24 hours) for calculating mitigation acres for low density and non-core Greater Sage-Grouse habitats in Oregon. Additionally, ODFW's Mitigation Framework identifies a similar type of disturbance band that is 0.6 mile on each side of transmission lines.

Therefore, mitigation would be required to offset the residual effects of the project if the proposed action is chosen in Segment 2. Project stakeholders formed a Greater Sage-Grouse work group to develop a Greater Sage-Grouse conservation strategy framework called the Mitigation Blueprint to minimize the amount and significance of impacts from this Project to Greater Sage-Grouse. The Mitigation Blueprint provides the basis for a Project-specific Greater Sage-Grouse habitat mitigation plan (HMP) that initially provides an overview of mitigation opportunities. The HMP would be refined throughout the permitting process. The goals of the Mitigation Blueprint are:

- Create common understanding and expectations among the project proponents (i.e., ODFW, IDFG, USFWS, and BLM) and other stakeholders about the standards, methods, time-frames and other considerations that will guide the development of a HMP; and
- Inform the adequacy of the HMP, including any impact assessments and proposed Greater Sage-Grouse compensatory mitigation actions for the project.

The Mitigation Blueprint was developed, using existing ODFW Mitigation Framework as a baseline, to create a project-specific framework. The Mitigation Blueprint provides specific guidance on how BLM and others will help IPC develop the HMP, and how BLM and others will review the IPC HMP for consistency with the Mitigation Blueprint. The Mitigation Blueprint specifies that much of the HMP will focus on compensatory mitigation, and lays the foundation for suitable compensatory mitigation actions.

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3.2.5 FISH RESOURCES

3.2.5.1 INTRODUCTION

This section describes the affected environment and environmental consequences of construction, operation and maintenance of the Proposed Action and the alternatives on fisheries resources. The Proposed Action and alternatives would pass through multiple fish habitat types currently occupied by non-special status fish species, and would overlap with known habitats for special status fish species. Fish species analyzed include the Endangered Species Act (ESA) threatened, endangered, candidate, and proposed species; other resident and anadromous fish species; and BLM, USFS and state sensitive species.

3.2.5.2 REGULATORY FRAMEWORK

FEDERAL

ENDANGERED SPECIES ACT

The federal ESA, (16 U.S.C. 1531–1544), as amended, established broad protection for species at risk of extinction. Species listed under the ESA are protected from any action that would constitute harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting the species, or attempting to engage in any such conduct. Section 7 of the ESA requires that federal agencies, in consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries (also called National Marine Fisheries Service), must ensure any action authorize, funded, or carried out by the federal agency is not likely to jeopardize the continued existences of an endangered threatened, or proposed listed species, or result in destruction or adverse modification of a critical habitat of a species. Agencies are required to use the best scientific and commercial data available to fulfill this charge.

The USFWS and NOAA Fisheries share responsibility for implementing the federal ESA as it relates to fish. In general, USFWS has oversight for terrestrial and resident freshwater species, and NOAA Fisheries for marine and anadromous species.

MAGNUSON-STEVENS ACT

The Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996, establishes procedures intended to identify, conserve, and enhance Essential Fish Habitat for those species regulated under a Federal Fisheries Management Plan. The Magnuson-Stevens Act requires federal agencies to consult with NOAA Fisheries regarding actions or proposed actions that may adversely affect Essential Fish Habitat (Section 305(b)(2)). Essential Fish Habitat is defined under the Magnuson-Stevens Act as those waters and substrate necessary to fish for “spawning, breeding, and feeding, for growth to maturity.”

PACFISH AND INFISH STRATEGIES

The Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Western Oregon and Washington, Idaho, and Portions of California (PACFISH) (USFS and BLM 1995) and the Interim Strategies for Managing Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada (INFISH) (USFS 1995), provide the components (goals, objectives, standards and/or guidelines, hierarchical analysis) needed to protect and conserve steelhead, salmon and inland native fish and their habitat on Bureau of Land Management (BLM) and United States Forest Service (USFS) administered lands. PACFISH and INFISH were developed as ecosystem-based interim strategies designed to arrest the degradation of habitat and begin the restoration of aquatic habitat and riparian areas on lands administered by the USFS and BLM. The intent of the strategies is to restore the ecological health and productivity of watersheds that contain present or potential anadromous and inland native fish habitat. The Decision Notice/Decision Record, Finding of No Significant Impact for the Environmental Assessment for these interim strategies amended Land Use Plans (LUPS) in the planning area for this EIS. The BLM Oregon/Washington and Idaho State Directors directed the BLM administrative units to apply the INFISH strategy in watersheds that contain current bull trout habitat (USDI BLM 1995). PACFISH and INFISH remain in place until longer term management strategies are completed.

The PACFISH and INFISH strategies include the following components: Riparian Goals, watershed-scale Riparian Management Objectives (RMOs), Riparian Habitat Conservation Areas (RHCAs), Standards and Guidelines, KEY watersheds, and watersheds analysis. Riparian Goals provide management context for proposed activities. Watershed-scale RMOs for stream channel, riparian and watershed conditions are numeric criteria that describe features of good aquatic habitat and were developed to provide the criteria against which attainment or progress toward attainment of the riparian goals are measured. RMOs provide the target toward which managers will be aiming as they conduct resource management activities across the landscape. PACFISH and INFISH require that proposed actions within RHCAs do not prevent or retard attainment of RMOs. RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines and include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems.

CONSERVATION AGREEMENT FOR PACIFIC LAMPREY

The Conservation Agreement for Pacific Lamprey (*Entosphenus tridentatus*) in the States of Alaska, Washington, Oregon, Idaho, and California 2012 (Agreement Number BLM-OR930-1225) was developed as a cooperative effort among natural resource agencies and tribes to reduce threats to Pacific Lamprey and improve their habitats and population status. Cooperative efforts through the Agreement are intended to (a) develop regional implementation plans derived from existing information and plans; (b) implement conservation actions; (c) promote scientific research; and (d) monitor and evaluate the effectiveness of those actions. Additionally, Best Management Practices to Minimize Adverse Effects to Pacific Lamprey (USFWS 2010) would be incorporated into any stream disturbing activity (e.g., aquatic habitat restoration, prescribed fire, recreational development, grazing, gravel extraction/mining, water diversions, etc.) on USFS- and BLM-managed lands throughout the range of Pacific lamprey.

Special Status Species Management

Both the USFS and the BLM have established lists of species they consider "at risk" on lands they manage. BLM Manual 6840 provides the BLM's special status species management policy and guidance for the conservation of special status species and their habitats. BLM sensitive species are managed under the special status species policy to ensure that actions taken by the BLM are consistent with the conservation of special status species and do not contribute to the listing of any species under the federal ESA. USFS Manual 2670 directs each Regional Forester to designate sensitive species on public lands administered by USFS. Per the manual, sensitive species are defined as "plant or animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce and existing distribution of the species."

USFS Management Indicator Species

The USFS also designates management indicator species (MIS). Forest Service Manual 2620.5(1) (USFS 1991) defines management indicator species as "…plant and animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent". Each National Forest designates its own list of MIS. The Wallowa-Whitman National Forest has five MIS or groups that could occur in the analysis area. Two fish species in the B2H analysis area are identified as MIS; the redband trout and steelhead. A USFS report on aquatic MIS in the Wallow-Whitman National Forest is included in Appendix F.

State

Comprehensive Wildlife Conservation Strategies

The Idaho Department of Fish and Game (IDFG) and Oregon Department of Fish Wildlife (ODFW) have published comprehensive wildlife conservation strategies aimed at encouraging land management activities that conserve and enhance wildlife habitat (IDFG 2005; ODFW 2006). These state conservation strategies were established to create a conservation plan to conserve the states' species of greatest conservation need and to provide a common framework that would enable conservation partners (federal, state, and private) to jointly implement a long-term approach for the benefit of those species. The conservation strategies (also known as conservation plans) are not regulatory documents, so they are not intended to be prescriptive, and the species identified are not equivalent to an official state listing as threatened, endangered, or fully protected. However, these conservation strategies do identify species of greatest conservation need, identify the key habitats for each species and the regions within the state where they can be found, recommend actions to improve their population status and habitat conditions, and describe an approach for long-term monitoring. In general, the species identified as species of greatest conservation need are those that have demonstrated a conservation need (due to population or habitat conditions) or where demographic data are lacking. The Oregon Comprehensive Wildlife Conservation Strategies lists 224 species of greatest conservation need, which include 166 vertebrates and 58 invertebrates (ODFW 2006). The Idaho Comprehensive Wildlife Conservation Strategies establishes 229 species of greatest conservation need, which include 126 vertebrate species and 103 invertebrates (IDFG 2005). The IDFG is in the process of drafting a new state wildlife action plan that will supersede the comprehensive wildlife conservation strategies and may be released to the public in 2015.

Fish species present in the B2H Project analysis area that are addressed in the comprehensive wildlife conservation strategies include steelhead, redband trout, bull trout and Chinook Salmon.

Idaho Stream Channel Protection Act (Idaho Code Title 42, Chapter 38)

The Idaho Stream Channel Protection Act (Idaho Code Title 42, Chapter 38) protects streams from modifications that would adversely affect their ability to provide habitat for fish and wildlife. The Idaho Department of Water Resources must approve in advance any work being done on continuously flowing streams, and a permit is required before beginning any work that would alter a stream channel.

Oregon Fish Passage Regulations

The Oregon Fish Passage regulations (Oregon Revised Statutes 509.580 through 910 and Oregon Administrative Rules 635, Division 412) provides for the protection of upstream and downstream native migratory fish passage. The Fish Passage regulation prohibits construction of artificial obstructions across any waters that are currently or historically inhabited by native migratory fish, without providing for passage for native migratory fish. At minimum, new stream crossings on fish bearing streams must adhere to the ODFW fish passage design standards. If these new structures are to be located on streams with ESA-listed fish species, they must also adhere to NMFS/USFWS design standards.

Oregon also has regulations governing removal of or placement of fill in streams and wetlands. These regulations are implemented by the Oregon Department of State Lands (ODSL) and ODFW to protect streams and wetlands (Oregon Revised Statutes 196.795-990) and are described in more detail in Section 3.2.2 - Water Resources.

Oregon Endangered Species Act

The Oregon ESA of 1987 requires state agencies to develop programs to manage and protect endangered species, and to follow guidelines for threatened species. Responsibility for these species falls to the ODFW. Species can be Oregon state-listed as endangered or threatened, proposed as endangered or threatened, or a candidate for listing (Oregon Biodiversity Information Center [ORBIC] 2010). ODFW also maintains a sensitive species list, under which species can be designated critical or vulnerable. Critical sensitive species are imperiled with extirpation from a specific geographic area of the state because of small population sizes, habitat loss or degradation, and/or immediate threats. Critical species may decline to the point of qualifying as endangered or threatened if conservation actions are not taken. Vulnerable sensitive species are facing one or more threats to their populations and/or habitats. Vulnerable species are not currently imperiled with extirpation from a specific geographic area or the state but could become so with continued or increased threats to populations and/or habitats (ORBIC 2010). The Oregon ESA and implementing regulations limit disturbances to sensitive species and establishes penalties for violations. The regulations would affect both the locations and operations of B2H Project facilities.

Oregon Habitat Mitigation Policy

ODFW's Habitat Mitigation Policy (Oregon Administrative Rules 635-415-000) requires or recommends mitigation for impacts to or losses of fish and wildlife habitat caused by development projects. Priority for mitigation actions shall be given to habitat of native fish and wildlife species. Mitigation can involve habitat restoration, the posting of a bond, mitigation banks, or other means, depending on the habitat category of the affected area.

Oregon Regulation of Riparian Vegetation

The state of Oregon's Oregon Forest Practices Act and Oregon Administrative Rules (629-635 and 629-640) regulate the protection of riparian management areas and stream side vegetation. The purpose of OAR 629-635 is water protection focusing on measures in riparian areas to maintain and improve, where necessary, water quality parameters necessary to provide fish habitat. The OAR 629-640-0400 defines specific instructions for retaining vegetation along streams and within riparian management areas. These plans must be developed and reviewed by the state to ensure compliance with riparian protection measures prior to construction activities.

3.2.5.3 Issues Identified for Analysis

The following list summarizes the fisheries-related issues that were raised by the public, American Indian tribes, or federal and state agencies during scoping, as well as the issues that must be considered as stipulated by laws or regulations.

- Will proposed project activities result in loss of riparian vegetation that would affect stream temperature, organic input, large woody debris supply, or stream bank stability? Would these changes be temporary or permanent?
- Would there be instream sediment increases from road and right-of-way construction and ongoing road runoff that would impact fish?
- Could hazardous substances runoff such as oils and herbicides from construction and maintenance–related activities impact fish?
- Would new stream crossing activities like culvert installation impede fish passage?
- Stream crossing structures could impede natural large woody debris, water, or sediment movement.
- What precautions would be taken to prevent invasive aquatic species from being introduced from construction, operations, and maintenance actions?

- How would stream crossings modify fish habitat? Would adding hard bank structures reduce habitat quality?
- What would be the effects of in-stream construction on fish that may be present in the crossing area?
- Will water withdrawals from streams entrain or impinge fish?
- What effects would blasting near or in streams have on fish?
- Will tribes access to fish be affected by construction, operation and/or decommissioning of the Project?

3.2.5.4 Methodology

In general, the analysis area used for the fisheries assessment includes streams crossed by the transmission line or roads and potential fish-bearing stream segments 1,000 feet downstream of all such crossings. Indirect effects of road construction, improvement and use may include the potential to add sediment and turbidity to streams that are not directly crossed. To assess what these effects would be, all new or existing roads to be improved that are within 500 feet of fish-bearing streams were evaluated. The distance of 500 feet was selected as a conservative estimate of road-induced sediment effects to streams.

Initial methods to determine stream areas with fish resources of concern included examining existing literature and analysis of the Proposed Action and alternatives relative to streams crossed or potentially affected. GIS analyses were conducted to determine fish distributions by species, road and other facility intersections with streams, and areas affected by road activities. The analyses included obtaining the best available geospatial data on fish distribution (current), and overlaying the Proposed Action and alternatives. Information on fish presence in many streams outside those containing anadromous fish was limited so assumptions were made concerning where fish were likely present. These assumptions were based on species habitat requirements, known regional distributions, and historic distribution information. Species specific field surveys were not conducted for this Draft EIS to determine presence, absence, or abundance for any fish species.

Streams crossed by the Proposed Action and alternatives and fish species present in these streams were determined from several sources. The location of the Proposed Action relative to stream locations was initially determined through analysis of the transmission line centerlines and Global Information System (GIS) layers. The stream database from the National Hydrography Dataset layer was used to determine presence of perennial and intermittent streams as defined in the National Hydrography Dataset. Locations of anadromous fish and their life stages were primarily determined through the StreamNet database and ODFW online database, the Oregon Department of Forestry stream database which classifies streams as fish or non-fish streams, and Idaho Department of Environmental Quality stream type designation. Information was gathered at the subwatershed level. A subwatershed is defined as a sixth-level Hydrologic Unit Code (6th level HUC, 12 digit code). Maps of the 6th level HUCs crossed by the Proposed Action and alternatives showing the locations of stream crossings by the transmission line and access roads; the type of crossing proposed; and the nature of the stream (intermittent, perennial, canal or ditch) are contained in Appendix B.5 part 1.

The list of special status fish species was derived by looking at federal endangered, threatened, and candidate species that occur in Oregon and Idaho, species listed as endangered, threatened, and sensitive in Oregon, and sensitive USFS and BLM species that occur in Oregon and Idaho. This list was narrowed down to only species that have ranges overlapping the analysis area or, for rarer species, those with observation locations within the analysis area, and then further narrowed by those with suitable habitat in the analysis area.

SUPPLEMENTAL FISHERIES ANALYSIS

In response to data requests, focused specifically on the effects of B2H Project-related road development, made by the ODFW, BLM, and USFS, IPC prepared and delivered a *Supplemental Fisheries Analysis* dated October 2013 (IPC 2013) to supplement the information provided in Resource Report 6 (Water and Fisheries) to address, in part, what fish species may be present along the Proposed Action and alternatives and how the B2H Project could potentially affect, directly and indirectly, those species and their habitats. The data requests primarily concerned how road crossings of streams may affect fish and how road proximity to fish-bearing streams may influence these resources. Specific requests were made to identify all streams crossed, the characteristics of the crossed streams, and what fish are currently or were historically present at these crossings. The agencies also requested further explanation of the methods that would be used to ensure fish passage during and following road upgrades and new road development.

The Supplemental Fisheries Analysis was developed by preparing a detailed GIS analysis, intersecting hydrographic data layers with site-specific information on fish presence (e.g., species) and roads that would be part of the Proposed Action and alternatives. Tables and maps accompanying the analysis show the Proposed Action and alternatives, indicating all road-stream crossings, crossing type used, region of fish streams potentially affected by road related actions, and known or assumed fish-bearing streams. The Supplemental Fisheries Analysis report (IPC 2013), including tables and maps, is contained in Appendix B.5 part 2.

GIS analyses were conducted to determine fish distributions by species, road and other facility intersections with streams, and areas affected by road activities. The analyses included obtaining the best available geospatial data on stream channel locations and fish distribution (current and historic), and overlaying the proposed activities for the Proposed Action and the alternatives.

FISH DISTRIBUTION

GIS data acquisition focused on obtaining the current and potential historical distribution of species of interest. Species of interest included all anadromous species and redband trout. Several sources of GIS data and local agency knowledge were used to determine where fish species were located relative to the Proposed Action and alternatives.

Three main fish data sources reviews were used to make the initial estimate of the B2H Project fish distribution layer:

- StreamNet Hydrographic Base Layer (MSHv3) – This data layer served as the main base layer for both stream location and fish distribution. The StreamNet fish distribution for Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), steelhead (*O. mykiss*), and bull trout (*Salvelinus confluentus*) was included in this dataset.
- Oregon Department of Forestry (ODF) – The ODF GIS layers of known or assumed fish distribution (non-specific to species).
- ODFW Data Clearinghouse – The ODFW redband trout (*O. mykiss*) data layer was used to best determine the location of inland redband trout. The data acquisition included contacts with various ODFW staff including Jon Bowers in headquarters, as well as Nadine Craft, the ODFW Data Steward. ODFW biologist Shannon Hurn (formerly of Burns, Oregon) also helped clarify the details of the redband trout data layer.

The information from these layers was merged to obtain an initial estimate of fish distribution. Staff biologists reviewed the developed layers and made additions based on stream characteristics and known proximity to fish streams. The fish distribution was then further refined through review by federal agency personnel, who provided additional information about historical fish distribution. Federal agency reviewers included Richard Pastor and Jason Sutter of the BLM and Brad Lovatt of the USFS. State agency reviewers included Tim Bailey and Nigel Seidel of ODFW. Information gained from the agency review was used to further modify and finalize the fish distribution layer.

Access Road Impact

Data to support the road impact analysis were organized under four tasks, which are described below. Using the GIS data described above, GIS analysis was conducted to help address potential effects to fish resources from B2H Project road activities. Project roads and transmission line routes and other ancillary features were individually overlaid with subwatershed and general land ownership layers using the ArcGIS “Identity” tool. Where applicable, the resulting files were further identified with the resource layers, supporting the table templates and summarizing impacts in a standard format. The following describes how the resource layers were developed before running them through the “Identity” data model to produce the individual tables presented in Appendix A to the Supplemental Fisheries Analysis.

- Task 1 – Provide tables of the intersection of roads and hydrographic layers including stream types, vegetation, fish species present, and area disturbed. This task included providing tables indicating where native migratory fish road-stream crossing locations occur and site-specific activities at each crossing. Stream crossing impacts were identified through intersect analysis with site-specific activities. Tables included in the Supplemental Fisheries Analysis provide the data for the analysis. The tables and the data presented include:
    - *Number and Acreage of Water-Crossing Types by Subwatershed and Ownership along the Proposed Action and Alternatives* (Table A-1 in Appendix A of the Supplemental Fisheries Analysis): The fish distribution layer was intersected with the project roads layer, resulting in the crossings point layer. The crossings were then assigned a crossing type based on the flow regime of the intersected stream. All crossings fell on intermittent, perennial, or canal/ditch stream types. Intermittent streams were assigned crossing Type 2 (Drive-through/Ford) and both perennial and canal/ditch stream types were assigned crossing Type

3 (Culvert). The estimated disturbance area for each crossing type was determined mathematically where crossing Type 2 impacts equaled 0.02-acre each, and crossing Type 3 impacts equaled 0.17-acre each. Data were then totaled by subwatershed.

  - *Stream Type and Fish Distribution Located at Waterbody Road Crossings* (Table A-2 in Appendix A of the Supplemental Fisheries Analysis): This table summarizes the crossings output of the analysis in Table A-1, but adds the sum of anadromous and other non-anadromous fish stream crossings.
  - *Waterbody Road Crossing Locations at or within 1,000 feet of Streams that Contain Anadromous and Special Status Fish Species* (Table A-3 in Appendix A of the Supplemental Fisheries Analysis): Summarizes crossings containing anadromous and special status fish species. The crossing points were manually evaluated and assigned fish distribution attributes if fish streams were present within 1,000 feet downstream of each crossing location. Crossings were identified with Regional Gap Analysis Program vegetation data to identify those in forested or non-forested habitat. Crossings were listed individually, rather than summed by subwatershed as in Tables A-1 and A-2 of the Supplemental Fisheries Analysis, and indicate whether fish are present at, downstream, or both of each crossing location.
  - *Waterbody Road Crossing Locations of All Streams*: (Table A-4 in Appendix A of the Supplemental Fisheries Analysis).
- Task 2 – Calculate the migratory fish stream length within 1,000 feet downstream of direct stream crossing
  - *Waterbody Road Crossing Locations at or within 1,000 feet of Fish-Bearing Streams*, (Table A-5 in Appendix A of the Supplemental Fisheries Analysis) documents where native migratory fish streams are located within 1,000 feet downstream (perennial or intermittent streams only) from a new or existing road-stream crossing to be improved within each subwatershed.
- Task 3 – Calculate stream length and area disturbed within 500 feet of road segments that do not cross streams
  - *Road and Other Project Facility Disturbance within 500 Feet of Project Area Streams during Construction and Operation* (Table A-6 in Appendix A of the Supplemental Fisheries Analysis): Project road centerlines were buffered 500 feet on either side. Those buffers were used to clip the stream layer. Fish-bearing crossing points were used to extract stream segments within 1,000 feet downstream of crossings. Those stream segments were used to “erase” the streams clipped by the 500-foot road buffers that were within 1,000 feet of road crossings. This procedure avoided double counting impacts to stream lengths from direct road crossings and from roads within 500 feet (but that do not cross streams). The stream layer was also buffered 500 feet, distinguishing between fish-bearing and non-fish-bearing streams. This buffering allowed for analysis of acres of impact from new roads, existing roads (to be improved), and other facilities’ disturbance footprints within 500 feet of streams. Acres of impact were summarized by category (total road area, area within 500 feet all streams, and area within 500 feet of fish-bearing streams).
- Task 4 – Estimate road density by watershed

- *Total Road Density*: Table A-7 in Appendix A of the Supplemental Fisheries Analysis reports the road density within each subwatershed along the Proposed Action and alternative routes. ESRI StreetMap roads were identified with subwatersheds and lengths calculated for existing roads (which include existing roads to be improved by the Project). These served as the existing roads (both not to be improved and to be improved). New project road lengths were identified within subwatersheds and lengths calculated. Existing road density was calculated by taking the existing road lengths within each subwatershed and dividing them by the subwatershed area. Total road density was calculated by adding new road lengths to the existing road lengths, and then dividing by the subwatershed area. This table is not included in this Draft EIS.

3.2.5.5 Affected Environment

The Proposed Action and alternatives cross eleven 4th level HUC subbasins which are considered to have either anadromous or resident fish populations. General effects to fish are discussed at the subbasin level (4th level HUC); effects to special status fish, essential fish habitat and critical habitat are discussed at the subwatershed level (6th level HUC). The following subbasins are crossed by the proposed B2H Project:

- Middle Colombia-Lake Wallula subbasin (HUC 17070101 in the in the Middle Columbia River Basin)
- Willow subbasin (HUC 17070104 in the Middle Columbia River Basin)
- Umatilla subbasin (HUC 17070103, Middle Columbia River Basin)
- Upper Grande Ronde subbasin (HUC 17060104, Lower Snake River Basin)
- Powder subbasin (HUC 17050203, Middle Snake River Basin)
- Burnt subbasin (HUC 17050202, Middle Snake River Basin)
- Brownlee Reservoir subbasin (HUC 17050201, Middle Snake River Basin)
- Willow subbasin (HUC 17050119, Middle Snake River Basin)
- Lower Malheur subbasin (HUC 17050117, Middle Snake River Basin)
- Lower Owyhee subbasin (HUC 17050110, Middle Snake River Basin)
- Middle Snake-Succor subbasin (HUC 17050103 in the Middle Snake River Basin)

The six project area segments roughly correspond with hydrologic basin boundaries in the project area.

The fish species and habitat in the analysis area are primarily coldwater resident and anadromous species; however some areas do support native warm-water fish species. Many of the species of major interest provide important commercial, tribal, and recreational fishery resources in the northwest. Fish habitat quality varies by location, orientation, geographic land form, vegetation, and past and current land uses. Shoreline/bank vegetation, particularly large trees in the riparian areas, helps moderate temperature and supply input of organic debris in the form of leaves, terrestrial insects, and large woody debris.

Anadromous Fish

Anadromous fish spawn in freshwater, rear for varied periods, and then migrate as juveniles to the ocean before returning as adults to freshwater streams, rivers, and lakes to spawn. Three species of anadromous salmonids are present in the analysis area including Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), and steelhead (*O. mykiss*). Varied races of these species are assumed to be in the analysis area including spring/summer-run Chinook salmon, Middle Columbia River summer steelhead and Snake River Basin summer steelhead, depending on the river system. Pacific lamprey (*Entoshpenus tridentatus*) is also present within the analysis area.

Resident Fish

Resident fish complete their life cycle entirely in the freshwater system. The native subspecies of rainbow trout (*O. mykiss*) is known within the analysis area as inland Columbia Basin redband trout (*O. mykiss gairdneri*). Bull trout (*Salvelinus confluentus*), a native char species, is also present in part of the B2H Project area. Mountain whitefish (*Prosopium williamsoni*) is another native salmonid present in cold water systems and may be present in some of larger cold water systems in the project area. Other common fish species present in many of the streams in the analysis area include suckers (*Catostomus* spp.), northern pikeminnow (*Ptychocheilus oregonensis*), peamouth (*Mylocheilus caurinus*), redside shiner (*Richardsonius balteatus*), daces (*Rhinichthys* spp.), and sculpins (*Cottus* spp.)

Special Status Fish

Special status species addressed in this section include fish species that are:

- Listed as threatened or endangered, proposed for listing, or identified as a candidate for listing by the USFWS or NOAA Fisheries under the federal ESA
- Listed as threatened or endangered, proposed for listing, or identified as a candidate for listing by the State of Oregon under the Oregon ESA of 1987 (Sections 496.171–496.170)
- Listed by the BLM as sensitive
- Listed by the USFS as sensitive or management indicator species
- Listed as a species of concern by the USFWS or NOAA Fisheries under the federal ESA, or as a sensitive species by the State of Oregon.
- Listed as a commercial salmon species under the Magnuson-Stevens Act (MSA) with designated Essential Fish Habitat (EFH).

Based on an assessment of known species distributions and habitats in the analysis area, 10 special status and MIS are likely to occur in the B2H Project area. Four federally listed threatened species have the potential to occur in the analysis area. Each has designated critical habitat associated with it. Two distinct population segments of steelhead in the Middle Columbia and Snake rivers have a potential to occur and spring/summer-run Chinook salmon have the potential to occur as well. The fall-run Chinook salmon occurs in the Snake River basin, however neither the Proposed Action nor any of the alternatives would cross any streams with suitable habitat or designated critical habitat for this species. Special status fish species in the B2H Project area are listed in Table 3-81 and Table 3-82 and are briefly summarized below. Species selected by a national forest as management indicator species are used to monitor a particular habitat type. As shown in Table 3-81, there are four species designated as management indicator species by the Wallowa-Whitman National Forest. An *Analysis of Effects for Wallowa-Whitman National Forest Management Indicator Species* is located in Appendix F of this Draft EIS.

Riparian area protections designated by the applicable forest land and resource management plans (LRMPs) require coordination with the states of Oregon and Idaho to select BMPs to address conditions at each stream or wetland site. These BMPs should be compliant with Federal Clean Water Act requirements and be monitored and adjusted as necessary to ensure the protection of riparian habitat. Additionally, stream bank protection measures must include preservation of large woody debris and aging trees that may provide downed tree material in the future. Stream temperature increases are limited to the 0.5° Fahrenheit limit on class 1 streams and the standards outlined by the Oregon and Idaho state regulations. Roads must cross riparian habitat perpendicularly and may not obstruct stream or groundwater flow (USFS 1991).

FISH SPECIES DESCRIPTION AND STATUS

UMATILLA RIVER SUBBASIN (SEGMENTS 1 AND 2)

Middle Columbia River Summer Steelhead (*Oncorhynchus mykiss*)

The following information is excerpted from the Northwest Power and Conservation Council (NPCC) subbasin plan for the Umatilla River and Willow Creek subbasins (NPCC 2004). The Middle Columbia River (MCR) steelhead Distinct Population Segment (DPS), was originally listed as threatened under the Endangered Species Act (ESA) on March 25, 1999 (64 FR 14517), and after a status review by NMFS was again listed as threatened on Sept. 2, 2005 (70 FR 52630). This ESU includes all natural-origin populations in the Columbia River basin above the Wind River, Washington, and the Hood River, Oregon, including the Yakima River, Washington. The ESU also includes the only populations of winter inland steelhead in the United States (in the Klickitat River, Washington, and Fifteenmile Creek, Oregon). Both the Deschutes River and Umatilla River hatchery stocks are included in the ESU, but are not listed (NOAA Fisheries 2004).

MCR summer steelhead adults return to the Columbia River from March through October after having spent from one to three years in the ocean. Adults spawn from January to June in the year following their entry into freshwater. Juvenile summer steelhead will smolt and migrate to the ocean in May and June. Most wild summer steelhead migrate to the ocean at age 2, while most hatchery smolts migrate at age 1. In contrast, winter steelhead return to the Columbia River from November through April after having spent two years in the ocean. Adults spawn from December through June. Juvenile winter steelhead smolt and migrate to the ocean in May and June. Wild winter steelhead juveniles spend two or three years rearing in freshwater, while hatchery juveniles spend only one year rearing in freshwater. Only MCR summer steelhead are found in the Umatilla River subbasin and occasionally in the Willow Creek subbasin. Umatilla River origin summer steelhead adults typically enter the Columbia River from the Pacific Ocean in June through August of the year before spawning. Entry into the Umatilla River begins in August, peaks in March and is mostly complete by May 1 (NPCC 2004, Section 3). Spawning in the Umatilla River and tributary streams usually occurs from mid-February to early June with peak spawning in early to mid-April. Juvenile steelhead emerge from redds in late April through early July, and most rear through two winter seasons before migrating as smolts from the Umatilla River into the Columbia River.

Table 3-81. Special Status and Management Indicator Fish Species in the Analysis Area

Species	Status	Likelihood of Occurrence by Project Segment					
		1	2	3	4	5	6
Middle Columbia River steelhead *Oncorhynchus mykiss* [1]	ESA T, CH, BLM, USFS, MIS, O-SC	Moderate to high	N	N	N	N	N
Snake River Basin steelhead *Oncorhynchus mykiss* [1]	ESA T, CH, BLM, USFS, MIS, O-SV	N	Moderate to high	Moderate to high [2] (potential habitat only)	N	N	N
Snake River Chinook spring/summer-run *Oncorhynchus tshawytscha*	ESA T, CH, BLM, USFS, A, O-LT	N	Moderate	N	N	N	N
Snake River Chinook fall-run *Oncorhynchus tshawytscha*	ESA T, CH, BLM, USFS, A, O-LT	N	N	N	N	N	N
Bull trout *Salvelinus confluentus*	ESA T, CH, BLM, USFS, O-SC	N	Moderate	Low	N	N	N
Coho salmon *Oncorhynchus kisutch*	MSA-EFH	Moderate	N	N	N	N	N
Redband trout *Oncorhynchus mykiss gairdneri*	ESA SOC, BLM, USFS, MIS, O-SV	High	High	High	High	High	High
Rainbow trout *Oncorhynchus mykiss*	MIS	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Pacific lamprey *Entosphenus tridentatus*	ESA SOC, A, O-SV	Low	N	N	N	N	N
Western brook lamprey *Lampetra richardsoni*	O-SV	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Table Abbreviations: USFSW = U.S. Fish and Wildlife Service; ESA =Endangered Species Act; T = threatened; CH = critical habitat; ESA SOC = species of concern; BLM = Bureau of Land Management; USFS = U.S. Forest Service; A = anadromous; MIS = management indicator species; O- = Oregon Department of Fish and Wildlife; SC = critical sensitive species; SV = vulnerable sensitive species; LT = listed threatened; N = Not present in analysis area, MSA = Magnuson-Stevens Act, EFH = Essential Fish Habitat.

Table Notes: [1] Only summer-run occurs within the analysis area. [2] This information is based on modeling of potential habitat for SRB steelhead within Project Segment #3. Steelhead do not currently occupy any of the Powder River subbasin or other areas in Segment 3. This subspecies was historically sympatric with redband trout in these tributary areas of the Snake River, but the anadromous life history form was extirpated by construction of the Hells Canyon Dam Complex.

Table 3-82. Fish Species Listed and Proposed, and Candidates for Listing Under the Federal ESA, and/or Habitat Designated under the MSA, and/or Listed by the State of Oregon as Sensitive Species

Species [1]	Status [2]	Fish Habitat Designation (Specific Type in Project Area) [3]	Fish Occurrence in Project Area [4]	Occurrence Potential By Segment [5]					
				1	2	3	4	5	6
Middle Columbia River summer steelhead DPS (*Oncorhynchus mykiss*)	F (T), S (C)	CH (PCEs for spawning, rearing, migration), ESH (all habitat types)	HD/D	K	K	N	N	N	N
Snake River summer steelhead DPS (*O. mykiss*)	F (T), S (V)	CH (PCEs for spawning, rearing, migration), ESH (all habitat types)	HD/D	N	K	N/HE	N/HE	N/HE	NHE
Coho salmon (*O. kisutch*)	NA	EFH (rearing, migration), ESH (all habitat types)	HD/S	M	M	N	N	N	N
Snake River spring/summer Chinook salmon ESU (*O. tshawytscha*)	F (T)	CH (PCEs for rearing, migration), EFH (rearing, migration), ESH (all)	HD/D	N	K	N/HE	N/HE	NHE	N/HE
Bull trout (*Salvelinus confluentus*)	F (T), S (C)	CH (PCE for migration)	HD/S	N	L	L	N	N	N
Interior Columbia Basin redband trout (*O. mykiss gairdneri*)	S (V)	NA (similar to steelhead)	HD/D	K	K	K	K	K	K
Pacific lamprey (*Entosphenus tridentata*)	F (SOC), S (V)	NA (rearing, migration)	HD//N	M	M	N/HE	N/HE	N/HE	N/HE

Table Notes: [1] DPS = Distinct Population Segment, ESU = Evolutionarily Significant Unit. [2] Species Status Designations: Federal (F): C = ESA Candidate Species, P = Proposed, T = Federally Threatened, SOC = Species of Concern, DL = Federally Delisted, NA = not applicable; State of Oregon (S): C = Critical, V = Vulnerable. [3] CH = Critical Habitat designated under federal Endangered Species Act (ESA), EFH = Essential Fish Habitat designated under federal Magnuson-Stevens Act (MSA), PCE = primary constituent elements of designated CH; NA = not applicable/no federal or state habitat designation; ESH = essential salmonid habitat designated under the Oregon Removal/Fill Law. [4] HD = Habitat documented or suspected within the project area or near enough to be impacted by project activities, HN = Habitat not within the project area or affected by its activities, D = Species documented in general vicinity of project activities, S = Species suspected in general vicinity of project activities, N = Species not documented and not suspected in general vicinity of project activities. [5] K = Known to occur (documented within the analysis area), L = Likely to occur (documented within project vicinity outside analysis area), M = May occur (not documented in project vicinity but suitable habitat is present in analysis area and the project is within the species' range), N = Does not occur, H/E = historic but extirpated populations upstream of man-made barrier dam(s)

Source: Official US Fish and Wildlife Species list for the Boardman to Hemingway Transmission Line Project (June 2014), NMFS, ODFW Sensitive Species List (2008), Oregon Removal/Fill Law (ODSL 2014), Pacific Fishery Management Council (1998), StreamNet database.

Current major production areas of MCR summer steelhead in the Umatilla subbasin include Birch Creek and its tributaries, and Meacham Creek and its tributaries. Historically, Butter Creek and McKay Creek upstream of McKay Reservoir also may have supported MCR steelhead populations. Adult steelhead are also occasionally found in Willow Creek, and a population of resident redband trout is found there. Willow creek and its tributaries may have historically had a population of steelhead.

However, a population does not currently exist in Willow Creek as a result of fish passage problems and the absence of good rearing habitat (NPCC 2004a). MCR summer steelhead may be present in the lower portions of Butter Creek approximately 8 miles downstream from the proposed B2H Project route. Steelhead currently occupy Birch Creek and a tributary stream, Stewart Creek, and Critical Habitat (CH) for MCR steelhead is designated in the areas of these streams that would be crossed by the Project route. MCR steelhead and designated CH also occur in upper Meacham Creek or tributary streams near the locations of proposed Project access road crossings. Maps showing the current distribution of summer steelhead and designated CH within subbasins/segments related to the Project route are presented in Appendix B of the Supplemental Fisheries Analysis (Appendix B.5 part 2 of this Draft EIS).

Chinook Salmon (*Oncorhynchus tshawytscha*)

The following information is excerpted from the Northwest Power and Conservation Council (NPCC) subbasin plan for the Umatilla River/Willow Creek subbasin (NPCC 2004). The endemic spring Chinook population went extinct in the Umatilla/Willow subbasin in the early 1900s. In 1986, spring Chinook salmon were re-introduced into the subbasin. These fish were from Carson Hatchery Stock which is a mixture of upriver spring Chinook races that spawn above Bonneville Dam. This stock enters the Columbia River from the ocean from February through April. Entry into the Umatilla River begins in late March, peaks in May, and is mostly complete by the end of June (citing Zimmerman and Duke1996). The majority (approximately 75 percent) of a run enters the Umatilla River in May. Little is known of historical spring Chinook salmon distribution in the Umatilla River Subbasin. However, oral testimony from tribal members and immigrants indicates that the North Fork Umatilla, McKay Creek above the reservoir, and the North Fork of Meacham Creek once had harvestable levels of spring Chinook salmon (citing Swindell 1942). In addition, spawning occurred in the mainstem from the forks (RM 89.5) to the confluence of McKay Creek (RM 50.5) and in McKay, Birch, and Butter creeks (NPCC 2004). Spring Chinook salmon may currently utilize the lower reach of Birch Creek for rearing and migration. Since this area of Birch Creek is more than 8 miles downstream from the area that would be crossed by the Proposed Action, spring Chinook salmon do not occur within the analysis area for potential effects due to Project activities. Therefore, Umatilla River spring Chinook salmon will not be discussed further in the Fisheries section of the Draft EIS.

Coho Salmon (*Oncorhynchus kisutch*)

The following information is excerpted from the Northwest Power and Conservation Council (NPCC) subbasin plan for the Umatilla River/Willow Creek subbasin (NPCC 2004). As with Chinook salmon, coho went extinct in the Umatilla/Willow subbasin early in the20th century. From 1966 to 1969 and then starting again in 1987 hatchery reared coho smolts have been introduced into the Umatilla River. These smolts are from Tanner Creek (lower Columbia River) stock. Adult coho salmon returning to the Umatilla River typically enter the river from mid-September through mid-December (citing Contor et al. 1997). Most returns are adults but three year olds (jacks) are common and have averaged about 9 percent of the total returns since 1988. Spawning has been observed in late October and throughout November and December with a few observations made in January (personal communication: C. Contor, CTUIR, May 2004).

Coho emerge from the gravel in February, March or April depending on the location of the redds in the winter and the associated water temperature and spawn time. Most juvenile coho rear one summer and one winter in the Umatilla before migrating to the Columbia River in April and May. The current distribution of coho salmon is limited to the Umatilla River subbasin; coho are not found in the Willow Creek subbasin (NPCC 2004). According to StreamNet data, the mainstem of Birch Creek downstream of Pilot Rock is currently utilized by coho salmon for spawning and rearing (StreamNet 2014). Amendment 18 of the Pacific Coast Salmon Plan (NMFS and PFMC 2014) designated EFH under the MSA for coho salmon within this reach of Birch Creek. The Proposed Action would cross this area of Birch Creek occupied by coho salmon and with designated EFH. Refer to tables In Appendix A and maps in Appendix B of the Supplemental Fisheries Analysis (Appendix B.5 part 2 of this Draft EIS).

Upper Grande Ronde River Subbasin (Segment 2)

Snake River Basin Steelhead (*Oncorhynchus mykiss*)

The following information is excerpted from the Biological Assessment for programmatic actions by the BLM and the USFS within the Blue Mountains region of Oregon and Washington (BLM-USFS 2013). The Snake River Basin steelhead DPS was first listed as threatened on August 18, 1997, (62 FR 43937), and after a status review was again listed as threatened on July 28, 2005. The Snake River DPS historically supported more than 55 percent of total steelhead production in the Columbia River Basin and continues to produce a large percentage. The DPS includes all naturally spawning populations of A-run and B-run steelhead in the Snake River and its tributaries. Snake River Basin steelhead spawn and rear in all tributaries used by Snake River Chinook salmon as well as many additional smaller tributaries. The ICTRT identified six MPGs: the Grande Ronde River, Imnaha River, Clearwater River, Salmon River, Lower Snake River, and the Hells Canyon reach of the Snake River.

Adult Snake River Basin steelhead return to main-stem rivers from late summer through fall, where they hold in larger rivers for several months before moving upstream into smaller tributaries. Adult dispersal toward spawning areas varies with elevation, with the majority of adults dispersing into tributaries from March through May, with earlier dispersal at lower elevations and later dispersal at higher elevations. Spawning begins shortly after fish reach spawning areas, typically during a rising hydrograph but prior to peak flows. Steelhead, typically, select spawning areas at the downstream end of pools, in gravels ranging in size from 0.5 to 4.5 inches in diameter. Juveniles emerge from redds in 4 to 8 weeks, depending on temperature. After emergence, fry have poor swimming ability and initially move from the redds into shallow, low-velocity areas in side channels and along channel margins in order to escape high velocities and predators; the young fish progressively move toward deeper water as they grow in size. Juveniles typically reside in fresh water for 2 to 3 years or longer depending on water temperature and growth rate. Smolts in the Snake River Basin migrate downstream during spring runoff, from March to mid-June depending on elevation.

Snake River Basin steelhead exhibit two distinct morphological forms, identified as A-run‖ and ―B-run‖ fish, which are distinguished by differences in body size, run timing, and length of ocean residence. B-run fish predominantly reside in the ocean for 2 years, while A-run fish typically spend only 1 year in the ocean. As a result of this difference, B-run steelhead are typically larger than A-run steelhead. The smaller size of A-run adults allows them to spawn in smaller headwater streams and tributaries. The differences between the two fish stocks represent an important component of phenotypic and genetic diversity of the Snake River Basin steelhead DPS, exhibited through the asynchronous timing of ocean residence, segregation of spawning by stream size, and possible differences in the habitats the fish use in the ocean.

Within the Upper Grande Ronde River subbasin and the analysis area (Segment 2) for the Proposed Action and alternatives, SRB summer steelhead and designated CH occur in the following streams: Grande Ronde River, Dry Creek, Graves and Little Graves Creeks, Rock and Little Rock Creeks, and Sheep Creek. Refer to the tables and maps in the Supplemental Fisheries Analysis in Appendix B.5 part 2 of this Draft EIS for additional information on these stream locations with possible B2H Project effects.

Snake River spring Chinook Salmon (*Oncorhynchus tshawytscha*)

The following information is excerpted from the Biological Assessment for programmatic actions by the BLM the USFS within the Blue Mountains region of Oregon (and Washington) (BLM-USFS 2013). Spring, summer and fall Chinook salmon runs returning to the major tributaries of the Snake River were classified as an Evolutionarily Significant Unit (ESU) by NMFS in 1999. The Snake River spring/summer/fall Chinook ESU includes current runs to the Tucannon River, the Grande Ronde River, the Imnaha River, and the Salmon River. Some or all of the fish returning to several of the hatchery programs are also listed, including those returning to the Tucannon River, Imnaha River, and Grande Ronde River hatcheries in Oregon and Washington, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River in Idaho.

Adult Snake River spring and summer Chinook enter the Columbia River on their upstream spawning migration from February through March and arrive at their natal tributaries from June through August. Spawning occurs in August and September. Juveniles exhibit a river-type life history strategy, rearing in their natal streams during their first summer of life before beginning their migration to the ocean the following spring. After reaching the ocean as smolts, the fish typically rear 2 to 3 years in the ocean before beginning their migration back to freshwater.

Within the Upper Grande Ronde River subbasin and the analysis area (Segment 2) for the Proposed Action and alternative, Snake River spring Chinook salmon occur in the mainstem Grande Ronde River. CH is also designated for this ESU in the same area of this river. Refer to tables in Appendix A and maps in Appendix B of the Supplemental Fisheries Analysis (Appendix B.5 part 2 of this Draft EIS) for additional information on these stream locations with possible Project effects.

Upper Grande Ronde River and Powder River Subbasins (Segments 2 and 3)

Columbia River Basin Bull Trout (*Salvelinus confluentus*)

The following information is excerpted from the Biological Assessment for programmatic actions by the BLM and the USFS within the Blue Mountains region of Oregon and Washington (BLM-USFS 2013). The Columbia River Distinct Population Segment (DPS) of bull trout was listed as a threatened species on June 10, 1998 (63 FR 31647). The final rule to designate critical habitat for bull trout was published in the Federal Register October 18, 2010 (50 CFR Part 17).

Bull trout historically occurred in major river drainages in the Pacific Northwest from about 41°N to 60°N latitude, from the southern limits in the McCloud River in northern California and the Jarbidge River in Nevada, north to the headwaters of the Yukon River in the Northwest Territories, Canada. Bull trout exhibit both resident and migratory life-history strategies through much of their current range. These include anadromous (migratory between salt and fresh water), resident, adfluvial (lake-dwelling), and fluvial (migratory stream- and river-dwelling) populations. Resident bull trout complete their life cycles in the tributary streams in which they spawn and rear. Migratory bull trout spawn in tributary streams, and juvenile fish rear from 1 to 4 years before migrating to a lake, river, or saltwater to mature.

Bull trout are most often associated with undisturbed habitat characterized by diverse cover and structure (e.g., LWD, undercut banks, boulders, and pools). Maintaining bull trout populations requires stream channel and flow stability. Bull trout appear to have more specific habitat requirements than other salmonids, which limits their spawning to cold, clean, generally pristine streams, often within headwater reaches. Bull trout do not reach breeding maturity until 3 to 5 years of age at lengths of approximately 250 millimeters or larger. Large bull trout typically inhabit pools containing concentrations of woody debris. Very few bull trout inhabit areas without some wood component (Buchanan et al. 1997). Spawning usually occurs during September and October in headwater streams when water temperatures are below 50°F. Depending on water temperature, incubation is normally 100 to 145 days, with eggs remaining in spawning gravels up to six inches (in) deep until spring, when the fry emerge. Water temperatures above 59°F are thought to limit bull trout distribution.

Within the Grande Ronde River subbasin, bull trout currently spawn and rear in the upper Grande Ronde River and tributary streams of the upper river where critical habitat is also designated (USDI FWS 2010). These stream reaches are located at least 30 miles upstream of the area where the Proposed Action would cross the Grande Ronde River. However, bull trout can migrate in the mainstem river through the area of the Project where CH is also designated for migration. Within the Powder River subbasin, bull trout are currently restricted to the headwater areas of Lake Creek, upper Powder River (Silver Creek and Little Cracker Creek), Rock Creek, Big Muddy Creek, Salmon Creek, Pine Creek, N.Powder River, Anthony Creek, Indian Creek, and Wolf Creek. Bull trout are suspected to be in Eagle Creek (J. Zakel, ODFW, personal communication, 5/23/2004). (NPCC 2004). CH for bull trout is designated in some of these streams, including the North Powder River and Wolf Creek above the confluence with the Powder River (USDI FWS 2010). These stream reaches with designated critical habitat are several miles upstream of the Project analysis area for the Proposed Action crossing the

Powder River. Refer to tables In Appendix A and maps in Appendix B of the Supplemental Fisheries Analysis (Appendix B.5 part 2 of this Draft EIS) for additional information on these stream locations.

All Subbasins (Segments 1 to 6)

Redband Trout (*Oncorhynchus mykiss gairdneri*)

Inland Columbia Basin redband trout (*Oncorhynchus mykiss gairdneri)* is a subspecies of O. mykiss which occupies inland watersheds of the Columbia River Basin in central and eastern Oregon. The life history and habitat requirements for this subspecies are similar throughout much of its range in this region of Oregon, and within the area of the proposed Project. Redband trout occur in all perennial fish-bearing streams and some intermittent seasonal streams within the Project area. Maps and tables in Appendix B.5 provide information on the streams and watersheds inhabited by redband trout and other resident fish. The following descriptive information is partially excerpted from the Northwest Power and Conservation Council subbasin plan for the John Day River in central Oregon (NPCC 2005).

The species Oncorhynchus mykiss is one of the most taxonomically complicated groups in Oregon. (citing Currens1997) suggests that separate groups of redband trout evolved in large river systems, such as the Columbia, Deschutes, Klamath and Sacramento rivers. The subspecies that occurs in the John Day Subbasin is Oncorhynchus mykiss gairdneri, which is present in inland drainages of the Pacific Northwest. Ancestral redband trout probably reached the Sacramento-San Joaquin basin from the south during the second half of the Pleistocene Epoch and penetrated the Columbia, Fraser and Athabasca river basins between 30,000 and 50,000 years ago (citing Behnke 1992). All redband trout of the Columbia and Fraser River basins are classified as O. mykiss gairdneri. This subspecies is genetically and morphologically differentiated from coastal rainbow trout. Columbia River redband trout exhibit a wide variety of life history strategies. Anadromous stocks of redband (steelhead) trout migrate approximately 217 miles from the mouth of the John Day River down the Columbia River to the Pacific Ocean. Fluvial stocks occupy larger rivers and spawn in smaller tributaries. Resident forms inhabit smaller tributaries and headwater areas for their entire lives.

Redband trout tend to spawn in rivers and streams during the spring months of March, April and May. Cool, clean, well-oxygenated water is necessary for the eggs to survive. Redband trout fry emerge from the gravel in June and July. For the most part, they live near where they were spawned. Redband trout are three years old at maturity, with size varying depending on the productivity of individual waters. Few redband trout exceed 10 inches in length (citing ODFW 1996). After young trout emerge from the spawning gravel, they often rear in low velocity areas associated with stream margin habitats, high cover areas and interstitial spaces. Adults require habitat for resting and feeding and thus are generally found in areas of abundant cover associated with deep pools, large organic material, undercut stream banks and overhanging vegetation. Over-winter sites, characterized by low velocity areas with cover, including large woody debris, are important to all age classes (citing Bjornn and Reiser 1991, Pyzik 2003).

Steelhead and redband trout are sympatric (occupying the same range without loss of identity from interbreeding) in all basins that contain steelhead. Sympatric populations with different life histories form different populations due to assortative mating, but are not reproductively isolated from each other (citing Currens 1987). Each morphology appears to be able to produce offspring of the other type. Redband males have been observed to pair with steelhead females, particularly when steelhead populations are small. Redband trout populations also occur above barriers to anadromous fish (citing ODFW 1995) (NPCC 2005).

Redband trout (resident and migratory) occur sympatrically with Middle Columbia River (MCR) summer steelhead in various streams within the Umatilla River subbasin (Project Segments 1 and 2). Both of these subspecies occur in several streams that would be crossed by the Proposed Action and/or access roads, including Birch Creek and upper Meacham Creek. Redband trout and Snake River Basin (SRB) summer steelhead occur sympatrically in numerous streams within the Upper Grande Ronde River subbasin (Segment 2). Both of these subspecies occur in several streams that would be crossed by the Proposed Action and alternatives and/or access roads including Dry Creek, Grande Ronde River, Graves Creek, Little Rock Creek, Rock Creek, and Sheep Creek. Within the Upper Grande Ronde River subbasin and the analysis area, redband trout also occur in stream reaches not occupied by SRB steelhead including Little Graves Creek, Little Rock Creek, upper Ladd Creek, and East Fork Ladd Creek.

Within the Powder River subbasin and the analysis area for the Proposed Action and alternatives, redband trout (resident and migratory) occur in many perennial fish-bearing streams. The *O. m. gairdneri* populations in the Powder River subbasin are resident only. The steelhead life history was extirpated above Thief Valley Dam in 1932 and completely extirpated from the subbasin with construction of the Hell's Canyon Complex of dams. In areas where there are no barriers to such movements, there remain segments of the population that exhibit fluvial and adfluvial life histories (NPCC 2004b). Redband trout (resident and migratory) and other native resident fish may occur in several streams that would be crossed by the Proposed Action and alternatives and/or access roads including the Powder River and the following perennial fish-bearing streams: Beaver, Big, Chalk, Clover, Cusick, Gentry, Goose, Jimmy, Lick, North Fork Daly, Thorn, and Velvet Creeks. Refer to tables in Appendix A and maps in Appendix B of the Supplemental Fisheries Analysis (in Appendix B.5 part 2 of this Draft EIS) for additional information on these stream locations with possible effects.

FISH PRESENCE WITHIN SPECIFIC PROJECT AREAS

The presence of general fish species and other aquatic species was assumed for all intermittent and perennial streams and rivers in the analysis area. Maps showing special status fish presence for streams and rivers in the Project area are presented in Appendix B of the Supplemental Fisheries Analysis (in Appendix B.5 part 2 of this Draft EIS). The fish presence maps show anticipated special status fish presence by stream and by species, and also show designated habitat types where applicable. Table 3-81 shows the likelihood of presence of special status fish in the analysis area by segment.

Table A-1 in Appendix A of the Supplemental Fisheries Analysis (Appendix B.5 part 2 of this Draft EIS) shows the number and types of stream crossings and acres disturbed at each by subwatershed and ownership for the Proposed Action and alternatives. A total of 296 road-stream crossings would occur along the Proposed Action for a total of 14 acres of disturbance. Of these, 242 would have intermittent flow, 44 would have perennial flow, and 10 would be canal/ditch crossings that may or may not be flowing perennially. All 44 of the perennial streams are considered to be fish bearing. Table A-2 in Appendix A of Supplemental Fisheries Analysis (in Appendix B.5 part 2) shows stream types and fish presence at each access road crossing by HUC and land ownership.

Table A-3 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) shows waterbody road crossing locations at or within 1,000 feet of all fish-bearing streams. The table indicates all known fish species where present at a crossing and those within 1,000 feet downstream of a crossing. As noted in the table, roads associated with the Proposed Action would cross at or within 1,000 feet upstream of 8 steelhead, 4 Pacific lamprey, and 48 redband trout streams. While some other species may be present in some of these streams, species designations are not indicated in the ODFW database.

For the Proposed Action about 9 miles of fish-bearing streams would be within 1,000 feet downstream of road-stream crossings. Approximately 4 miles of affected stream length would be in intermittent streams. The length of fish-bearing streams that could be affected by road improvements or other project facility operations is presented in Table A-6 in Appendix A of Supplemental Fisheries Analysis (Appendix B.5 part 2). Roads referred to in the table include existing roads and new roads. Federal and state highways and improved county roads were not included in the analysis in Table A-6.

Table A-1 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) shows roads and other project facility disturbances within 500 feet of streams during construction and operations for the Proposed Action and alternatives. There are approximately 39 miles of fish-bearing streams within 500 feet of new and existing roads to be improved along the Proposed Action.

3.2.5.6 Environmental Consequences

The analysis of impacts to fish and other aquatic species considered what the Proposed Action and alternatives construction and operations activities would be from plans and impacts presented for similar projects and actions in the literature. This analysis considered the nature of the affected waterbodies; likely in-stream disturbances and nearby ground disturbing activities; types of affected vegetation and quantity of cleared riparian areas, proposed right-of-way maintenance methods, miles of road to be developed and maintained, proposed stream crossing methods, and the design features that would be implemented.

Methodology

General fish populations were assumed to be present in all perennial streams and in all intermittent streams during seasonal flow periods. For special status fish, presence was assumed for all categories of likelihood as shown in Table 3-81 except not present (N). The methodology for assessing the potential impacts on fish resources associated with construction, operation, and maintenance of the B2H Project generally consisted of the following:

- Identifying the types of potential effects on resources that could result from construction, operation, and maintenance of the proposed transmission line and associated facilities

- Developing criteria for assessing the intensity of potential effects on fish resources and classifying the sensitivity of riparian vegetation communities to potential effects
- Assessing initial impacts on fish resources present in the study corridors
- Identifying appropriate design features for minimizing some potential adverse effects and determining areas where design features should be applied
- Disclosing potential residual impacts on biological resources (i.e., impacts anticipated after application of design features)

CRITERIA FOR ASSESSING INTENSITY OF IMPACTS

Criteria were developed to assess the intensity of a potential effect on fish resources associated with implementation of the B2H Project (Table 3-83). Criteria developed to assess the intensity of impacts on fish and sensitive aquatic habitats were based on considerations of a species legal status, regulatory protection, and susceptibility to temporary or permanent disturbances.

Table 3-83. Criteria for Assessing Intensity of Impacts to Fish Species and Habitats

Intensity of Impacts	Description
High	• Mortality of a federally endangered, threatened, or candidate fish species • Mortality of sensitive and other non- listed fish or permanent displacement from habitat that results in population or species-level effects • Permanent displacement of federally endangered, threatened, or candidate fish from habitats on which they depend • Permanent loss of habitat that would result in species- or population-wide effects • Permanent loss of habitat for federally endangered, threatened, or candidate fish • Loss or modification of aquatic habitats that are rare, support a wide range of species, regenerate slowly, and would require significant modification of aquatic elements during construction
Moderate	• Permanent loss of important habitat for sensitive fish • Mortality of sensitive fish that does not reduce population viability • Disturbance to non-listed fish during a critical or sensitive period • Permanent displacement of non-listed fish from important habitats that does not have population-level effects • Loss or modification of aquatic habitats that provide value to fish, regenerate from anticipated disturbance rapidly, and common aquatic elements that would require permanent alteration to accommodate the Proposed Action
Low	• Temporary disturbance of sensitive or federally endangered, threatened, or candidate species • Loss of habitat for non-listed species that does not result in population- or species-level effects • Limited or incidental mortality of non-listed species that does not result in population- or species-level effects • Temporary displacement of non-listed fish from seasonal habitats • Loss or modification of aquatic habitats communities that provide little value to wildlife, regenerate rapidly, and aquatic elements that are not a component of the natural landscape

NO ACTION ALTERNATIVE

Under the No Action alternative, the proposed B2H Project would not be approved by the BLM or USFS and the impacts associated with the B2H Project would not occur. As such, there would be no direct or indirect impacts on fish or aquatic habitats.

EFFECTS COMMON TO ALL ALTERNATIVES

Most direct and indirect effects to fish and aquatic resources by the Proposed Action and alternatives would result from three major project-related activities: construction and use of stream-crossing access roads; management of riparian and forest vegetation; and ground-disturbing and other project activities in proximity to waterbodies.

ACCESS ROADS

Generally, streams directly crossed by access roads have the greatest potential to be effected by B2H Project activities. Direct effects to fish could include fish mortality during construction of access roads if fish are present at the time in-stream activities to construct stream crossings are conducted. Direct effects would also include short-term loss of aquatic habitat or a reduction in overall habitat quality through an increase of erosion and sedimentation and removal of vegetation as a result of construction of access roads or transmission structures in aquatic habitats. The major potential direct effects on fish resources from stream crossings are a short-term downstream increase in suspended sediment and turbidity, and the potential for long-term fish passage blockage and impedance. Increased sedimentation is likely to result in reduced egg-to-fry survival. Fine sediment fills the interstitial spaces of spawning substrate which results in a decrease in flow over the eggs that would normally provide oxygen to the eggs and carry away metabolic wastes. Impacts from increased erosion and sedimentation during construction would be limited to the area of construction and approximately 1,000 feet downstream of construction and would be short term during construction activities.

Based on the data sets that were used for the effects analysis, the stream crossing types that would be used for the Proposed Action and alternatives are Type 2 – Drive through ford and Type 3 – Culvert. As the engineering plans are further developed for access roads, site-specific crossings would be designed and other crossing types may be used. Final crossing plans would be determined through consultation with federal and state agencies, as requested. Based on determinations by federal and state agencies regarding presence of migratory fish species and passage needs at specific stream crossings, the site-specific crossing type may need to be up-graded during the implementation phase of the B2H Project, for example from Type 2 – Drive through ford to Type 3 – Culvert for intermittent fish-bearing streams. The two crossing types currently planned for use as noted in the Revised POD are as follows:

- Type 2 – Drive through ford: Stream banks and approaches would be graded to allow vehicle passage and stabilized with rock, geotextile fabric or other erosion control devices. The stream bed would in some areas be reinforced with coarse rock material, where approved by the land-management agency, to support vehicle loads, prevent erosion and minimize sedimentation into the waterway. The rock would be installed in the stream bed such that it would not raise the level of the streambed, thus allowing continued movement of water, fish, and debris. Fords may be constructed in small, shallow streams (less than 2-foot stream depth and 20-foot active stream width) and rocky substrates. Fords may also be appropriate on wider streams when they have a poorly defined channel that often changes course from excessive bedload. A ford crossing results in an average disturbance profile of 25 feet wide (along the water body) and 50 feet long (along the roadway) for 1,000 square feet or 0.02 acre at each crossing. Disturbance amount is estimated based on need to get equipment into the riparian area to build the 14-foot-wide travel way and protect it from erosion by adding armoring. Flowing streams may warrant temporary structures to maintain fish passage, hydrology, and water quality to span the active channel during construction activities. Typical construction and maintenance vehicles that would use fords are described in Chapter 2.

- Type 3 – Culvert: Crossing of a stream or seasonal drainage that includes installation of a culvert and a stable road surface established over the culvert for vehicle passage. Culverts would be designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist where required by the land management agency, would recommend placement locations; culvert gradient, height, and sizing; and proper construction methods. Culvert design would consider bedload and debris size and volume. The disturbance footprint for culvert installation is estimated to be 50 feet wide (along the waterbody) and 150 feet long (along the road) for 7,500 square feet or 0.17 acre at each crossing. Ground-disturbing activities would comply with Agency-approved BMPs. Construction would occur during periods of low flow. The use of equipment in streams would be minimized. All culverts would be designed and installed to meet desired riparian conditions, as identified in applicable unit management plans. Culvert slope would not exceed stream gradient. Typically, culverts would be partially buried in the streambed to maintain streambed material in the culvert. Sandbags or other non-erosive material would be placed around the culverts to prevent scour or water flow around the culvert. Adjacent sediment control structures such as silt fences, check dams, rock armoring, or riprap may be necessary to prevent erosion or sedimentation. Stream banks and approaches may be stabilized with rock or other erosion control devices.

Hardened Ford crossings and Channel Spanning Structures are described in the Revised POD and in Chapter 2 but are not currently proposed. The stream crossing maps shown in Appendix B.5 part 1 show channel spanning structures in some locations; those would be culvert crossings instead. All perennially flowing streams and canal/ditches would have a Type 3 culvert crossing or other crossing type specified by jurisdictional agencies at the time of final engineering design. These crossings would be designed to allow fish passage and to reduce downstream sediment disturbance during use of the road for project operations. Crossings of intermittent streams would be by Type 2 drive through ford. Fish in intermittent streams would only be present when seasonal flow occurs, typically during winter and spring. However, site specific conditions may indicate the need for maintaining and/or improving passage for native fish at some proposed road crossings of fish-bearing intermittent streams. Based on determinations by federal and state agencies regarding presence of migratory fish species and passage needs at specific stream crossings, the site-specific crossing type may need to be up-graded during the implementation phase of the B2H Project, for example from Type 2 – Drive through ford to Type 3 – Culvert. Other considerations during the project design and construction phases could include use of stream ford types that may provide suitable long-term passage conditions for migratory aquatic species at road crossings of fish-bearing streams.

Vegetation Removal

The construction of new roads, improvement of existing roads, and construction of other facilities (substations and communication sites) would result in disturbance and vegetation clearing of approximately 2,200 acres within 500 feet of streams within the analysis area (shown in Appendix B.2 for Water Resources, Table B.2-2). Approximately 1,900 acres would be adjacent to intermittent streams and approximately 300 acres would be adjacent to perennial streams. Removal of riparian vegetation could result in increases in water temperature and have effects on fish habitats. In general, higher water temperatures decrease dissolved oxygen and can stress fish. Impacts associated with the removal of streamside vegetation would range from short- to long-term, depending on whether the vegetation removal would be short-term for construction or long-term for operations.

Low vegetation such as grasses and shrubs would be revegetated in disturbed areas outside the rights-of-way for access roads. In areas where the transmission line would cross forested areas, tree heights would have to be controlled and periodically trimmed for line clearance safety and maintenance reasons. Long-term loss of vegetation and trees near streams and along the transmission line may cause a slight localized increase in surface water temperature because stream temperature in forested settings can be strongly influenced by the presence or absence of shade. Water temperature impacts would be greatest along small, slow-moving and shallow waterbodies. Thinning or removal of vegetation within or adjacent to riparian areas could also contribute to long-term local increases in sedimentation.

Removal of vegetation and direct solar radiation can result in measurable local water temperature increases. As stream temperature is constantly striving to gain equilibrium with air temperature, the influence of direct solar radiation can be substantial. However, even though gaps in forest canopy cover can result in a local increase in water temperature, overall stream temperatures do not continue to increase because the warmed water moves into canopy cover downstream (Danehy et al. 2005). Approximately 32 acres of forested riparian vegetation would be permanently removed for road and powerline crossings for the Proposed Action.

The majority of stream crossings for the Proposed Action and alternatives would occur in shrublands, outside of forested areas. Shrub canopy cover is typically concentrated along the edges of a stream. Overhead sun imparts maximum solar radiation directly onto the deeper, middle portions of the stream. Approximately 54 acres of shrubland riparian vegetation would be disturbed during construction. Of that area, approximately 2 acres of riparian vegetation adjacent to temperature-impaired (high water temperature) streams would be disturbed.

Ground Disturbing Activities near Waterbodies

Indirect effects of road construction, improvement and use may include the potential to add sediment and turbidity to streams that are not directly crossed. Although the level of effect would be less than from direct road-stream crossings, construction activities on these nearby roads and facilities could still contribute sediment to streams. Table A-6 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) shows roads and other project facility disturbances within 500 feet of streams during construction and operations for the Proposed Action and alternatives. Roads referred to in the table include existing roads and new roads. Federal and state highways and improved county roads were not included in the analysis in Table A-6.

There are approximately 39 miles of fish-bearing streams within 500 feet of new and existing roads that would be improved for the Proposed Action. New road construction would have a higher likelihood of creating sediment runoff to streams, and at greater levels, than would the upgrading of existing roads, given the much lower ground disturbance involved in the latter. However, as shown in Table A-6 in Appendix A of the Supplemental Fisheries Analysis for the disturbance acres of new (36 acres) and existing (109 acres) roads, only about a third of the disturbance near fish-bearing streams would be from new road construction. Operations and maintenance activities near fish-bearing streams would be infrequent (several time per year) and limited to the specific areas of maintenance activity.

Special Status Species

Direct effects on federally listed fish species and other sensitive species would be similar to those described above for all other fish species. The B2H Project may affect MSA-designated salmon EFH or ESA-designated CH by altering the function of the stream to provide primary constituent elements of habitat for listed and other sensitive fish through the direct loss of streamside and in-stream vegetation and reduction of water quality through increase erosion and sedimentation. Table A-3 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) shows waterbody road crossing locations at or within 1,000 feet of streams that contain anadromous and special status fish species.

Direct effects would be similar for all of the special status species that occur in the study area and would include displacement, disruption of habitats, increased sedimentation and the potential for direct mortality. Indirect effects on USFS sensitive aquatic species associated with the B2H Project would be limited in extent and magnitude. Indirect effects could include potential temporary increases in turbidity and sedimentation associated with construction, operation and maintenance activities near fish-bearing streams.

Protected Fish Habitats

CH is identified by NOAA Fisheries and the USFWS for many federal ESA threatened and endangered fish species and is designated for several fish species in the B2H Project area. EFH is designated under the MSA for commercial Pacific salmon species including for Chinook and coho salmon within the B2H Project area. Direct effects to CH and salmon EFH would include physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such alterations reduce the quality or quantity of EFH (50 CFR 600.810). Components of the Proposed Action and alternatives with the potential to adversely impact designated EFH include removal of terrestrial and riparian vegetation, in-water road and culvert construction, and the risk of accidental spills and leaks of hazardous materials.

Construction activities occurring in streams for road crossings or other structures would directly affect designated critical habitat and salmon EFH by temporarily increasing sedimentation, increasing water temperatures (through reduced riparian vegetation), decreasing natural cover and availability of forage, and impairing fish passage. These impacts would be localized to the areas of construction activity and short-term for the duration of project construction. Indirect effects to critical habitat and EFH would include temporary increases in turbidity and sedimentation associated with long-term periodic operation and maintenance activities near these designated streams. Specific analysis in the Draft EIS on the extent and amount of EFH within the B2H Project area was not conducted because of a lack of useable data.

The information presented here is a summary of effects to the watersheds that the Proposed Action would cross. Watershed road density is an indicator used by NOAA Fisheries and USFWS in the evaluation of watershed condition. The condition of a watershed is one of several metrics used to evaluate fish habitat condition. NOAA Fisheries (1996) has defined three classes of watershed condition:

- “properly functioning” (road density of less than 2 miles per square mile [mi/mi2])
- “at risk” (road density from 2 to 3 mi/mi2), and
- “not properly functioning” (road density greater than 3 mi/mi2)

Higher road density is often correlated with increased peak stream flows and increased sediment to streams, both considered adverse conditions for fish. Peak flow, for example, can cause accelerated bank erosion, excessively scour stream bottoms including spawning redds, disturb benthic organisms that are important food sources for fish, or wash out instream structures such as large wood that supply important stream habitat components. Table A-7 of the Supplemental Fisheries Analysis (in Appendix B.5 part 2 of this Draft EIS) lists the existing road miles and density, estimates of the miles of new roads for the Proposed Action and the alternatives that would contribute to increased road density, and the resulting estimated future road density of the subwatershed if the B2H Project were constructed.

The average existing road density across all 105 subwatersheds is 1.6 mi/mi2, which would increase to 1.7 mi/mi2 with the addition of 334 miles of new roads for the Proposed Action. The density range among the subwatersheds ranges from 0.5 to 5.7 mi/mi2. Along the Proposed Action, 26 subwatersheds already have road densities of 2.0 to 3.0 mi/mi2 and would be considered “at risk.” Five other subwatersheds have a road density over 3.0 mi/mi2 and would be characterized as “not properly functioning.” While the Proposed Action would add miles to nearly all these subwatersheds, only 3 subwatersheds would see a road density increase from less than 2.0 mi/mi2 to between 2.0 and 3.0 mi/mi2. Three other subwatersheds would increase from 3.0 mi/mi2 or less to more than 3.0 mi/mi2. Based on this metric, each of these subwatersheds would be moved into a category of greater risk to fish resources from possible increased flow and sedimentation.

Some increase in peak runoff and sedimentation may occur in these 6 subwatersheds as a result of the Proposed Action, but with relatively few miles added per subwatershed, the effects should be minimal.

The effects from the Proposed Action to spawning and rearing habitat in streams in these basins resulting from the road contribution would be slight. Similar effects are anticipated from the alternatives.

In summary, some relative increase in risk categorization to subwatershed conditions would occur. There would be an increase in road density in 6 of the 105 subwatersheds along the Proposed Action. The increase in risk to watershed conditions should be slight because the number of new road miles added by the proposed B2H Project would be relatively low, and most subwatersheds in the project area are currently considered properly functioning and would not be effected.

DESIGN FEATURES

Project design features will be implemented to avoid and minimize impacts to fish species and aquatic habitats during construction, operation, and maintenance. These and other Project activities would adhere to standard operating procedures and Best Management Practices (BMPs) required by federal and state regulatory and land management agencies. For example, Project activities related to proposed road construction and improvement within land areas managed by the BLM in Oregon would comply with existing BMPs for reducing sediment delivery to streams and other aquatic habitats (BLM 2011). Appendix C of this Draft EIS contains a list of design features for many Project activities including those that may impact aquatic species and habitats. Specific design features that would be applied to reduce potential adverse impacts on fish and fish habitats include:

- SW-1—A Storm Water Pollution Protection Plan (SWPPP) and Erosion and Sediment Control Plan (ESCP) cover construction related ground disturbing activates associated with the B2H Project. The SWPPP and ESCP would specify BMPs to control and minimize erosion, sediment, and other pollutants associated with construction activities. These BMPs would be modified as necessary to account for changing construction conditions and schedules. The BMPs would be installed and maintained until disturbed areas meet final stabilization criteria.
- SW-2—A storm water team would be assembled to manage construction storm water issues, conduct the required inspections, provided guidance to construction crews, and maintain and update the SWPPP and ESCP as needed.
- SW-3—The SWPPP and ESCP would identify areas with critical erosion conditions that may require special construction activities or additional Best Management Practices (BMPs) to minimize soil erosion and would be modified as necessary to account for changing construction conditions and schedules.
- SW-4—Temporary and permanent BMPs would be used to control erosion, sediment and other pollutants associated with construction related activities. BMPs would be installed and maintained until disturbed areas meet final stabilization criteria.
- SW-5—Damaged temporary erosion and sediment control structures would be repaired in accordance with the SWPPP and ESCP.
- SW-6—Upon completion of construction, permanent erosion and sediment BMPs would be installed in accordance with the SWPPP and ESCP.
- SW-7—Apply BMPs from Instruction Memorandum OR-2011-074: Best Management Practices to Reduce Sediment Delivery from BLM Roads in Oregon.

- SPC-1—A spill prevention containment and countermeasures (SPCC) plan would be prepared and implemented as applicable for this project and would detail protective measures to prevent and contain oil and other petroleum products spills and leaks.
- SPC-2—Construction spills would be promptly cleaned up and contaminated materials would be transported to a disposal site that meets local, state, and federal requirements.
- SPC-3—Fueling areas within staging area would be contained. If fueling is conducted in other areas along the right-of-way, BMPs would be implemented to prevent spills.
- SPC-4—If a spill occurs which is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor would be identified and available to further contain and clean up the spill.
- SPC-5—For spills in standing water absorbent materials would be used as appropriate by the contractor to recover and contain released materials on the surface of the water. If the standing water is considered a water of the state, it would be reported immediately to the appropriate agency.
- SPC-6—If pre-existing contamination is encountered during operations, work would be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party (if identifiable); and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.
- SPC-7—Any oil spill to waters of the state/US are reportable. Oil spill notification is required for spills on land of 25 gallons or greater in Idaho. In Oregon an oil spill on land of 42 gallons or greater requires notification. Notification is required for hazardous material spills of reportable quantities (quantities are listed in the Code of Federal Regulations).
- SPC-8—Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes would be located in upland areas away from streams or wells.
- SPC-9—Pumps and temporary fuel tanks for the pumps would be stored in containment.
- SPC-10—Hazardous material would not be drained on to the ground or into streams or drainage areas. Totally enclosed containment would provide for all project generated trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.
- SPC-11—Refueling and storing potentially hazardous materials would not occur within a 100-foot radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. Spill preventive and containment measures or practices would be incorporated as needed.
- AQ-1—Routine and corrective O&M activities in streams with sensitive fish species would be conducted within the designated ODFW in-water work periods for each particular stream.
- AQ-2—Woody vegetation management within 100 feet of streams would be completed by hand crews.

- AQ-3—During O&M activities IPC would use existing stream crossings or new, permanent crossings that were approved as part of the Project, and IPC would not create additional crossings without prior agency permitting and approval.
- AQ-4—Only herbicides approved by the land-managing agency as safe to use in aquatic environments and reviewed by IPC for effectiveness would be used within 100 feet of aquatic resources.
- AQ-5—Protection of special status species including threatened and endangered species would be implemented in accordance with management policies set forth by appropriate natural resource management agencies (BLM, USFS, USFWS, NOAA, ODFW, IDFG, etc.). This would entail conducting pre-construction surveys for special status fish species at proposed stream crossing locations and streams within 500 feet of ground disturbing activities as agreed on by the agencies. In cases where such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat. These actions may include avoiding ground disturbing activities in or near streams during spawning periods, isolating fish from areas of in-stream project activities, altering the placement of roads or stream crossings, or conducting fish salvage operations to avoid direct fish mortality during construction.
- AQ-6—If specified by the jurisdictional agency, channel spanning structures would be designed and constructed to cross waterbodies identified as containing a sensitive fish species. The channel spanning structures would include installation of a large diameter culvert, arch culvert or shot span bridge with a stable road surface established over the structure for vehicle passage. Channel spanning structures would be designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist would recommend placement locations; structure gradient, height, and sizing; and proper construction methods.
- AQ-7—At a minimum, new stream crossings on fish bearing streams must adhere to ODFW and IDGF fish passage design standards. The B2H Project would adhere to ODFW fish passage designs and to design features similar to the Agency Operating Procedures identified in the Programmatic Biological Opinion for Aquatic Restoration Activities in the States of Oregon, Washington and portions of California, Idaho and Nevada (ARBO II) (USFWS 2013).
- AQ-8—For culvert replacements or new culvert installations on all fish-bearing streams, project design criteria would include associated work area isolation and fish salvage prior to any new construction. If listed species are involved, NOAA Fisheries, USFWS, and ARBO II Agency Operating Procedures (for federal lands) would apply.
- AQ-9—Construction in intermittent streams would be limited to dry periods.

Residual Impacts

Residual impacts represent anticipated continuing impacts on fish resources after the application of prescribed design features. Application of the design features such as aquatic species protection would reduce the magnitude, intensity, and duration of impacts on fish and fish habitat. Application of design features where sensitive species are identified during pre-construction surveys would reduce impacts to these species under the Proposed Action and all alternatives. Initial impacts to fish habitat would be reduced through the implementation of a stormwater protection plan to control erosion and prevent sedimentation and contaminants from entering waterbodies and fish habitat.

Table A-3 in Appendix A and maps in Appendix B of the Supplemental Fisheries Analysis (in Appendix B.5 part 2 of this DEIS) show access road crossing locations at or within 1,000 feet of all fish-bearing streams within various subwatersheds and Project Segments for the Proposed Action and alternatives. For the Proposed Action, there would be a total length of about 9 miles of fish-bearing streams within 1,000 feet downstream of proposed access road-stream crossings. There may be some level of residual effects to fish species and fish habitat due to construction of culvert-type stream crossings for these proposed access roads. Approximately 4 miles total of affected stream length within all Project Segments would be in intermittent streams which would primarily use ford-type crossings for access roads. These streams would be unlikely to have any direct effects from sediment moving downstream due to crossing construction, because the crossings would be constructed during the dry season when flows would not be present. However, there may be some short-term or long-term effects to fish passage at stream ford-type road crossings for any intermittent streams occupied by seasonally migratory fish species.

Within all Project Segments of the Proposed Action, there would also be potential effects to fish species and habitats in perennial streams and some intermittent streams resulting from ground disturbance due to proposed access roads that do not cross streams, but are within 500 feet of these streams. These streams and associated riparian vegetation areas may also be affected by construction, operation, and maintenance of other project facilities within 500 feet. Accurate calculations related to the amount of this ground disturbance within 500 feet of streams are currently not available for this Draft EIS. However, the total amount of this proposed disturbance (area adjacent to streams and affected stream length) may be relatively large within all Project Segments. Table A-6 in the Supplemental Fisheries Analysis (in Appendix B.5 part 2) provides preliminary data (acres and stream miles) for these types of ground disturbance.

Table A-3 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) indicates all known fish species where present at a crossing and those within 1,000 feet downstream of a crossing. As noted in the table, access roads associated with the Proposed Action would cross streams primarily with culverts at or within 1,000 feet upstream of fish bearing stream reaches: 8 total stream reaches occupied by steelhead, 4 by Pacific lamprey, and at least 48 by redband trout. While some other fish species may be present in some of these streams, specific species designations are not indicated in the ODFW or StreamNet databases. A final site assessment and final engineering design of each access road-stream crossing would be conducted prior to construction in order to identify the fish species present and the appropriate design features to apply to reduce and avoid impacts. This assessment would include consideration of site specific conditions which may indicate the need for maintaining and/or improving passage for native migratory fish at some proposed road crossings of fish-bearing intermittent streams.

The categorization and calculation of potential B2H Project effects to fish species and habitats, which were created for this Draft EIS, included data that may not have been suitable for appropriate effects analyses, and may have resulted in overestimation or underestimation of fisheries effects. The information provided may be revised, as needed, between release of the Draft EIS and Final EIS.

Segment 1—Morrow-Umatilla

The Proposed Action and alternatives in Segment 1 are within the Willow, Middle Columbia-Lake Wallula and Umatilla watersheds (5th level HUCs). The 6th level subwatershed HUCs that would be affected are listed in Table A-1 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2). Maps of the affected 6th level HUCs showing all proposed access road stream crossings by stream category and crossing type are also presented in Appendix B of the Supplemental Fisheries Analysis. These maps also display fish-bearing stream areas that would be affected within 500 feet of proposed access roads that would not cross the stream in that area. Table 3-84 summarizes the number of streams or stream reaches with sensitive fish species and habitats that could be impacted within 500 feet of proposed Project facilities, access road stream crossings, and access roads that would not cross streams in Segment 1.

Proposed Action

The Proposed Action in Segment 1 is approximately 95 miles long, and has 91 access road stream crossings. The majority of these crossings would be on intermittent (non-fish bearing) streams where Type 2-Drive through fords are proposed. There are also several proposed ford-type crossings of intermittent streams within possible fish bearing reaches. Table A-1 in Appendix A of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) indicates the estimated ground disturbance associated with each access road crossing type (culvert, ford) within the subwatersheds in Segment 1. Construction and maintenance for all of these ford-type stream crossings would result in a total of approximately 1 acre of direct disturbance to the stream bed and adjacent banks. There are 4 proposed Type 3-Culvert crossings on perennial fish bearing streams occupied by sensitive and/or special status species within this Project Segment. These culvert-type stream crossings would cause a total of about 1 acre of disturbance to fish habitat, and the stream bed and adjacent banks primarily during construction. There would also be short-term effects due to fish harassment, passage impairment, and other factors.

In the area of the Proposed Action for Segment 1, Willow Creek is occupied by resident redband trout. Birch Creek is occupied by redband trout and anadromous fish species: Middle Columbia River steelhead and coho salmon. Stewart Creek (Birch Creek tributary) is occupied by Middle Columbia River steelhead and redband trout in the area of the Proposed Action. Redband trout also occur in Little McKay Creek and upper McKay Creek within the analysis area. Portions of streams in the Beaver Creek-Meacham Creek subwatershed within the Segment 1 analysis area are occupied by redband trout, including reaches of Beaver and Little Beaver Creek, and several tributaries of Meacham Creek. MCR steelhead are present in Meacham Creek within this analysis area. Birch Creek has designated CH for Middle Columbia River steelhead and EFH for coho salmon; Stewart Creek, Meacham Creek, and lower Beaver Creek (outside of the analysis area) have designated CH for steelhead. Maps in Appendix B of the Supplemental Fisheries Analysis (in Appendix B.5 part 2) show fish distribution and approximate locations of designated CH/EFH within the Segment 1 analysis area. These maps also display the Proposed Action and access roads in relation to the fish-bearing streams noted above, as well as other streams within this analysis area.

Federally Listed and Candidate Species

Birch Creek-Stewart Creek Subwatershed

As indicated by maps in Appendix B of the Supplemental Fisheries Analysis (in Appendix B.5 part 2), the proposed transmission line would cross Birch Creek by spanning the stream valley. There would be no access road crossings of Birch Creek, but one access road is proposed to cross an intermittent tributary of Stewart Creek. A small area of Birch Creek would be within 500 feet of a proposed non-crossing access road.

Effects conclusions: No direct effects to designated EFH for coho salmon in Birch Creek are expected from B2H Project activities. There would also be no direct effects to Middle Columbia River steelhead or designated CH in Birch or Stewart Creek. In the area of Birch Creek within 500 feet of a proposed non-crossing access road, there would be a low amount of indirect effect to coho salmon EFH and CH for Middle Columbia River steelhead.

Beaver Creek-Meacham Creek Subwatershed

There is one proposed access road crossing of a fish-bearing (redband trout) tributary stream within 1000 feet of upper Meacham Creek with Middle Columbia River steelhead and designated CH for steelhead. Approximately 2 stream miles of upper Meacham Creek would also be affected by improvements to an existing non-crossing proposed access road within 500 feet of steelhead and designated CH.

Effects conclusions: Due to disturbance from the above access road stream crossing, there could be a low to moderate amount of direct/indirect effect to Middle Columbia River steelhead and CH within Meacham Creek. There would be a relatively low indirect effect to steelhead and CH from the proposed improvements to an existing road adjacent to Meacham Creek.

BLM, USFS, and State Sensitive Species

As noted above, there are at least 8 fish-bearing streams with redband trout and other fish species within the analysis area for Project Segment 1. As indicated in Table 3-84 for Segment 1, there would be a total of 10 proposed crossings with fords or culverts within 1000 feet of streams/stream reaches occupied by redband trout or other sensitive fish species. There would also be ground disturbance from non-crossing access roads and other project facilities within 500 feet of 15 streams/stream reaches with sensitive fish and habitat.

Effects conclusions: Within Segment 1, there could be a moderate amount of direct and indirect effects to sensitive fish species and habitats due to proposed access road stream crossings. A low amount of indirect effects would be expected to sensitive fish species and habitats due to other proposed activities such as non-crossing access roads in the vicinity of fish-bearing streams.

Table 3-84. Summary of Impacts to Fish Species and Habitats, Segment 1

Proposed Action/Alternative	Total No. of Road Stream Crossings	No. of Sensitive Fish-Bearing Stream Reaches With Non-Crossing Access Roads and Other Construction Ground Disturbance within 500 Feet	No. of Access Road Stream Crossings with Listed or Sensitive Fish Species Present at or within 1000 Feet of Crossing	No. of Access Road Stream Crossings with Ground Disturbance within 1,000 Feet of EFH and CH
Proposed Action	91	15	10	1
Horn Butte	91	15	10	1
Longhorn Alternative	74	13	10	1
Longhorn Variation	74	13	10	1

Table Abbreviations: EFH = Essential Fish Habitat; CH – critical habitat.

Horn Butte Alternative

As shown in Project maps (Appendix B of the Supplemental Fisheries Analysis in Appendix B.5 part 2), the Horn Butte Alternative includes the proposed Horn Butte Substation, and would follow the route alignment of the Proposed Action but would be approximately 6.5 miles shorter in length. Within the area of this shortened transmission line, there are no fish-bearing streams (intermittent or perennial). All of the access roads for facilities related to the Horn Butte Alternative would cross the same fish bearing streams/stream reaches as the Proposed Action. All non-crossing access roads and other facilities within 500 feet of fish-bearing stream reaches would also be the same for the Horn Butte Alternative as for the Proposed Action.

Effects conclusion: The Horn Butte Alternative would have the same effects to anadromous and other sensitive fish species and habitats as the Proposed Action.

Longhorn Alternative

The Longhorn Alternative, which includes the Longhorn Substation, would involve transmission line access road crossings of 17 fewer intermittent (non-fish bearing) streams and 1 less fish bearing stream (Willow Creek) than for the Proposed Action. All of the access roads for facilities related to the Longhorn Alternative would cross the same fish bearing streams/stream reaches as the Proposed Action. With the exception of Willow Creek in the Schoolhouse-Willow Creek subwatershed, all non-crossing access roads and other facilities with possible effects to fish-bearing streams/stream reaches would also be the same for the Longhorn Alternative as for the Proposed Action.

Effects conclusion: The Longhorn Alternative would have the same effects to anadromous fish species and habitats as the Proposed Action. This alternative action would have a negligible reduction of indirect effects to redband trout and other sensitive fish species and habitats within Segment 1.

Longhorn Variation

The Longhorn Variation, which includes the Longhorn substation, would involve transmission line access road crossings of 17 fewer intermittent (non-fish bearing) streams and 1 less fish bearing stream (Willow Creek) than for the Proposed Action. All of the access roads for facilities related to the Longhorn Variation would cross the same fish bearing streams/stream reaches as the Proposed Action. With the exception of Willow Creek in the Schoolhouse-Willow Creek subwatershed, all non-crossing access roads and other facilities with possible effects to fish-bearing streams/stream reaches would also be the same for the Longhorn Variation as for the Proposed Action.

Effects conclusion: The Longhorn Variation would have the same effects to anadromous fish species and habitats as the Proposed Action. This alternative action would have a negligible reduction of indirect effects to redband trout and other sensitive fish species and habitats within Segment 1.

Segment 2—Blue Mountains

The Proposed Action and Glass Hill Alternative in Segment 2 are primarily within the Upper Grande Ronde River watershed with a minor portion in the Umatilla River watershed (5th level HUCs). The 6th level subwatershed HUCs that would be affected are listed in Table A-1 in Supplemental Fisheries Analysis. Maps of the affected 6th level HUCs showing all proposed stream crossings by stream category and crossing type are also presented in Appendix B in Supplemental Fisheries Analysis. Table 3-85 summarizes the impacts to fish species and habitats from the Proposed Action and Glass Hill Alternative in Segment 2.

Table 3-85. Summary of Impacts to Fish Species and Habitats, Segment 2

Proposed Action/ Alternative	No. of Crossings	Construction Ground Disturbance within 500 Feet (acres)	Access Road Crossings with Listed or Sensitive Fish Species Present at or within 1000 Feet of Crossing				Ground Disturbance within 1,000 Feet of CH (acres)
			Bull Trout	Redband Trout	Snake River Basin Steelhead	Spring and Summer-Run Chinook	
Proposed Action	24	Y	N	Y	Y	N	67
Glass Hill Alternative	24	Y	N	Y	Y	N	67

Table Notes: N = not present; Y = yes present; EFH = Essential Fish Habitat; CH = Critical Habitat.

Proposed Action

The streams in the watersheds of Segment 2 contain habitat for and support resident and migratory fish including bull trout and redband trout, and anadromous species: Snake River Basin summer steelhead and spring and summer-run Chinook salmon. The Proposed Action in Segment 2 is approximately 40 miles long, and has 24 road stream crossings with a total of approximately 2 acres of ground disturbance (Table A-1 in Supplemental Fisheries Analysis in Appendix B.5 part 2). Approximately 8 acres of ground disturbance is anticipated within 500 feet of perennial streams in Segment 2. Short-term direct and indirect construction effects to fish species would have localized and short-term displacement with inadvertent mortality, and would therefore be low to moderate. Long-term indirect effects of project operation would likely be localized, temporary, intermittent and therefore low.

Federally Listed and Candidate Species

The Upper Grande Ronde River supports resident and non-anadromous migratory fish including bull trout and redband trout, and anadromous fish: Snake River Basin summer steelhead and spring and summer-run Chinook salmon. Snake River Basin (SRB) summer steelhead and redband trout are present at four access road crossings in Segment 2, where culvert crossings are proposed on Graves Creek, Little Rock Creek, and Rock Creek.

Even with effective implementation of design standards, short-term direct and indirect effects to listed and candidate species from project construction of the Proposed Action in Segment 2 would be high, due to the potential for mortality of federally listed or candidate fish species. Long-term operations effects to listed and candidate species would be indirect, intermittent and therefore low to moderate.

BLM, USFS, and State Sensitive Species

With effective implementation of design standards, short-term direct and indirect effects to redband trout from project construction of the Proposed Action in Segment 2 would be high, due to the temporary displacement and the potential for incidental mortality. Indirect long-term operations effects to sensitive species would be localized and intermittent and therefore low to moderate.

Protected Fish Habitats

The Upper Grande Ronde River and many of its tributaries have designated critical habitat for SRB steelhead, spring and summer-run Chinook salmon and bull trout. The Upper Grande Ronde River also has salmon EFH designated under the Magnuson-Stevens Act.

The Proposed Action would have no expected effects to salmon EFH since the transmission line would span the Upper Grande Ronde River, and there would be no access roads within 1000 feet of designated EFH. There would also be no expected effect to bull trout CH in the Upper Grande Ronde River where the transmission line would span this area. Approximately 67 acres of ground disturbing activities would take place within 500 feet of designated critical habitat for SRB steelhead. With effective implementation of design features, short-term direct and indirect construction effects to designated critical habitat would be low to moderate. Long-term indirect effects to critical habitat due to operations would be low as they would be short-term, localized and infrequent (several maintenance visits per year).

Glass Hill Alternative

The Glass Hill Alternative crosses the same Upper Grande Ronde River tributary streams and as the Proposed Action and has the same number of stream crossings, although 2 crossings would be at different locations than the Proposed Action. Both crossings would occur on perennial streams at a culvert. Both stream crossings support fish populations; one crossing on Little Rock Creek supports redband trout and other resident fish species (non-protected species) and the second crossing at Rock Creek supports Snake River Basin steelhead and redband trout. The Glass Hill Alternative would have one less crossing than the Proposed Action where steelhead are present.

Federally Listed and Candidate Species

Even with effective implementation of design standards, short-term direct and indirect effects to listed and candidate species from project construction of the Glass Hill Alternative would be high, due to the potential for mortality of federally listed or candidate fish species. Indirect long-term operations effects to listed and candidate species would be intermittent and infrequent and therefore low to moderate.

BLM, USFS, and State Sensitive Species

With effective implementation of design standards, short-term direct and indirect effects to redband trout from project construction of the Glass Hill Alternative would be high, due to the temporary displacement and the potential for incidental mortality. Indirect long-term operations effects to sensitive species would be localized and intermittent and therefore low to moderate.

Protected Fish Habitats

The Glass Hill Alternative would have no expected effects to salmon EFH since the alternative would span the Upper Grande Ronde River, and there would be no access roads within 1000 feet of designated EFH. There would also be no expected effect to bull trout CH in the Upper Grande Ronde River where the Proposed Action and alternative would span this area. Approximately 67 acres of ground disturbing activities would take place within 500 feet of designated critical habitat for SRB steelhead. With effective implementation of design features, short-term direct and indirect construction effects to designated critical habitat would be low to moderate. Long-term indirect effects to CH due to operations would be low as they would be short-term, localized and infrequent (several maintenance visits per year).

Segment 3—Baker Valley

The Proposed Action and alternatives in Segment 3 are primarily within the Powder, Bully and Burnt River watersheds, with a minor portion in the Upper Grande Ronde River watershed (5th level HUCs). The 6th level subwatershed HUCs that would be affected are listed in Table A-1 in the Supplemental Fisheries Analysis (in Appendix B.5 part 2). Maps of the affected 6th level HUCs showing all proposed stream crossings by stream category and crossing type are also presented in Appendix B of the Supplemental Fisheries Analysis.

There are three alternatives and five possible combinations of alternatives in Segment 3. While no anadromous species are currently present in the analysis area for the Proposed Action, potentially suitable habitat for Snake River Basin (SRB) steelhead is present in the analysis area for the Timber Canyon Alternative, based on habitat modeling data. SRB summer steelhead doesn’t currently occupy any of the Powder River or other watershed areas in Segment 3. This subspecies was historically sympatric (occupying the same range) with redband trout in these tributary areas of the Snake River, but the anadromous life history form was extirpated from all tributaries of the upper Snake River due to construction of the Hells Canyon Dam Complex. In order to facilitate comparisons of the alternatives with the Proposed Action in a manner that allows comparisons of the Proposed Action with each alternative individually, the analysis of effects among the Proposed Action and alternatives in Segment

3 compares each alternative with the Proposed Action. Table 3-86 summarizes the overall impacts to fish species and habitats of the Proposed Action and alternatives in Segment 3.

Table 3-86. Summary of Impacts to Fish Species and Habitats, Segment 3

Proposed Action/ Alternative	No. of Crossings compared to Proposed Action	Construction Ground Disturbance within 500 Feet (acres)	Crossings with Listed or Sensitive Fish Species Present at or within 1000 Feet of Crossing				Ground Disturbance within 1,000 Feet of EFH and CH (acres)
			Bull Trout	Redband Trout	Snake River Basin Steelhead	Spring and Summer-Run Chinook	
Proposed Action			N	Y	N	N	0
Timber Canyon Alternative	73 more than Proposed Action	185 acres more than Proposed Action	N	Y	N (*Y)	N	0
Flagstaff Alternative	6 more than Proposed Action	57 acres more than Proposed Action	N	N	N	N	0
Burnt River Mountain Alternative	9 more than Proposed Action	8 acres more than Proposed Action	N	Y	N	N	0

Table Abbreviations: N = not present; Y = yes present; EFH = Essential Fish Habitat; CH = Critical Habitat; * = potential habitat may be present.

Proposed Action

Streams in Segment 3 support bull trout and redband trout in addition to other resident fish. Redband trout are assumed to be present at 11 road crossings on the Proposed Action in Segment 3. No federally listed or other sensitive fish species are present in the analysis are for the Proposed Action. No designated EFH for salmon is present in the Proposed Action analysis area in Segment 3. CH is designated for bull trout in the upper Powder River and tributary streams in areas upstream and outside of the Proposed Action analysis area.

Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats in Segment 3 would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

With effective implementation of design standards, short-term direct and indirect effects to bull trout and redband trout from project construction of the Proposed Action in Segment 3 would be moderate, due to the potential for mortality of sensitive species. Indirect long-term operations effects to sensitive species would be localized and intermittent and therefore low.

Protected Fish Habitats

None present.

Timber Canyon Alternative

The Timber Canyon Alternative would be 15.2 miles longer than the Proposed Action and would have 73 more road stream crossings than the Proposed Action. There would be 26 crossings on intermittent streams with drive through fords and 33 perennial stream crossings at culverts. Three of the perennial stream crossings would be along a ditch or canal. Three of the perennial stream crossings would occur at or within 1,000 feet of a stream that supports special status fish species. The construction or improvements to required access roads would result in 185 more acres of disturbance within 500 feet of fish bearing streams than the Proposed Action.

The direct and indirect short-term construction effects to resident non-special status fish for the Timber Canyon Alternative would be low, due to the potential for incidental mortality and temporary dislocation of non-special status fish, but localized and short-term. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

The SRB steelhead historically occurred within the Chalk Creek-Powder River subwatershed. Because suitable habitat occurs within the watershed at 3 road stream crossings on the Timber Canyon Alternative, presence of the species is assumed for the purposes of effects analysis. Each crossing would occur at a culvert. The construction or improvements to the approximately 1.5 miles of roadway within 500 feet of Chalk Creek would result in 7 acres of disturbance within 500 feet of the stream. Short-term direct and indirect construction effects of the Timber Canyon Alternative to the SRB steelhead would be high, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

BLM, USFS, and State Sensitive Species

The redband trout occurs at 26 road stream crossings in the Chalk Creek-Powder River subwatershed. Of the 26 crossing locations where redband trout are known to occur, 6 are within intermittent streams and would be crossed with a drive through ford and 20 would be crossed with a culvert in a perennial stream. Short-term direct and indirect construction effects to redband trout in the Timber Canyon Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

Chalk Creek has potentially suitable habitat for the SRB steelhead, but critical habitat for this species is not currently designated in Chalk Creek or other streams within Segment 3 of the Project. The construction or improvements to the approximately 1.5 miles of roadway within 500 feet of Chalk Creek would result in 7 acres of disturbance within 500 feet of the stream. Direct and indirect construction effects to historic habitat in the Timber Canyon Alternative would be low resulting in temporary displacement due to increased turbidity, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Flagstaff Alternative, Including 230-kV Rebuild

The Flagstaff Alternative (including 230-kV Rebuild) crosses 15.1 miles and has 6 more road stream crossings than the Proposed Action. The Flagstaff Alternative and the comparable Proposed Action would both have five crossings on perennial streams where resident fish are assumed to be present. The Flagstaff Alternative analysis area is not known to support any anadromous fish populations, there are no fish bearing streams within 500 feet of a new or existing road, and there are no roads that cross at or within 1,000 feet of a stream that supports federally listed or other sensitive fish species. The direct and indirect short-term construction effects of the Flagstaff Alternative (including 230-kV rebuild) on general fish species would be low, due to temporary displacement and the potential for incidental mortality. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present in the analysis area.

BLM, USFS, and State Sensitive Species

None present in the analysis area.

Protected Fish Habitats

No critical habitat or EFU is present in the analysis area of the Flagstaff Alternative.

Burnt River Mountain Alternative

The Burnt River Mountain Alternative crosses 16.8 miles and has 9 more road stream crossings than the Proposed Action. There are 7 intermittent streams that would be crossed by drive through fords and 6 perennial streams and 3 ditches or canals would be crossed at culverts. Streams in the Burnt River Mountain Alternative analysis area are not known to support anadromous fish populations; however, resident fish (redband trout) are known to occur at or within 1,000 feet at 6 of the proposed crossings within the Lower Alder Creek and Powell Creek-Burnt River subwatersheds. There are 3.9 miles of fish bearing streams within 500 feet of new or existing roads in need of improvements. The construction or improvements of these roads would result in 15.9 acres of disturbance within 500 feet of fish bearing streams. The direct and indirect short-term construction effects of the Burnt River Mountain Alternative on general fish species would be low, due to temporary displacement and the potential for incidental mortality. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout are known to occur at or within 1,000 feet at 6 of the proposed crossings in the Lower Alder Creek and Powell Creek-Burnt River subwatersheds. Short-term direct and indirect construction effects to redband trout in the Burnt River Mountain Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH or EFH is present in the analysis area of the Burnt River Mountain Alternative.

Segment 4—Brogan Area

There are two alternatives of different lengths in Segment 4. In order to facilitate comparisons of the alternatives with the Proposed Action in a manner that allows comparisons of the Proposed Action with each alternative individually, the analysis of effects among the Proposed Action and alternatives in Segment 4 compares each alternative with the Proposed Action.

The Proposed Action and alternatives in Segment 4 are within the Brownlee Reservoir, Willow, and Lower Malheur watersheds (5th level HUCs). The 6th level subwatershed HUCs that would be affected are listed in Table A-1 in the Supplemental Fisheries Analysis in Appendix B.5 part 2. Maps of the effected 6th level HUCs showing all proposed stream crossings by stream category and crossing type are also presented in Appendix B.5 part 1. Table 3-87 summarizes the impacts to fish species and habitats in Segment 4.

Proposed Action

The Proposed Action in Segment 4 has 57 road stream crossings with a total of 2.2 acres of disturbance. Of the 57 stream crossings, 42 would cross intermittent streams with drive through fords, 11 would cross perennial streams and 4 would cross a ditch or canal at culverts. The streams in the area are not known to support anadromous fish species. Redband trout are known to occur at one stream crossing in the Durbin Creek subwatershed. Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats in Segment 4 would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

Table 3-87. Summary of Impacts to Fish Species and Habitats, Segment 4

Proposed Action/ Alternative	No. of Crossings compared to Proposed Action	Construction Ground Disturbance within 500 Feet (acres)	Crossings with Listed or Sensitive Fish Species Present at or within 1000 Feet of Crossing: Bull Trout	Redband Trout	Snake River Basin Steelhead	Spring and Summer-Run Chinook	Ground Disturbance within 1,000 Feet of EFH and CH (acres)
Proposed Action			N	Y	N	N	0 acres
Tub Mountain South Alternative	32 acres fewer than Proposed Action	31 acres fewer than Proposed Action	N	Y	N	N	0 acres
Willow Creek Alternative	43 acres fewer than Proposed Action	42 acres fewer than Proposed Action	N	Y	N	N	0 acres

Table Abbreviations: N = not present; Y = yes present; EFH = Essential Fish Habitat; CH = critical habitat

BLM, USFS, and State Sensitive Species

Redband trout are known to occur at or within 1,000 feet at one of the proposed crossings in the Durbin Creek subwatershed. Short-term direct and indirect construction effects to redband trout for the Proposed Action in Segment 4 would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH or EFH is present in the analysis area of the Proposed Action in Segment 4.

Tub Mountain South Alternative

The Tub Mountain South Alternative crosses 34.6 miles and has 32 fewer stream crossings than the Proposed Action. Twenty three access roads cross intermittent streams with drive through fords, 2 would cross perennial streams and 3 would cross a ditch or canal at culverts. The Tub Mountain South Alternative is not known to support anadromous fish populations; however, resident fish (redband trout) are known to occur at or within 1,000 feet at 2 of the proposed crossings within the Durbin Creek and Benson Creek subwatersheds. There are 2.4 miles of fish bearing streams within 500 feet of new or existing roads in need of improvements. The construction or improvements of these roads would result in 6.1 acres of disturbance within 500 feet of fish bearing streams.

Direct and indirect short-term construction effects of the Tub Mountain South Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout are present at 2 of the proposed road stream crossings within the Durbin Creek and Benson Creek subwatersheds. Short-term direct and indirect construction effects to redband trout for the Tub Mountain South Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH or EFH is present in the analysis area of the Tub Mountain South Alternative.

Willow Creek Alternative

The Willow Creek Alternative crosses 24.6 miles and has 43 fewer stream crossings than the Proposed Action. There are 29 intermittent streams that would be crossed by drive through fords and 4 perennial streams would be crossed at culverts. The Willow Creek Alternative is not known to support anadromous fish populations; however, resident fish (redband trout) are known to occur at or within 1,000 feet at 4 of the proposed crossings within the Durbin Creek-Burnt River and Benson Creek subwatersheds. There are 1.5 miles of fish bearing streams within 500 feet of new or existing roads in need of improvements. The construction or improvements of these roads would result in 5.4 acres of disturbance within 500 feet of fish bearing streams.

Direct and indirect short-term construction effects of the Willow Creek Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout are present at 4 of the proposed road stream crossings within the Durbin Creek-Burnt River and Benson Creek subwatersheds. Short-term direct and indirect construction effects to redband trout for the Willow Creek Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH or EFH is present in the analysis area of the Willow Creek Alternative.

Segment 5—Malheur

The three alternatives to the Proposed Action are different lengths in Segment 5. In order to facilitate individual comparisons of the alternatives with the Proposed Action, the analysis of effects among the Proposed Action and alternatives in Segment 5 compares each alternative to the Proposed Action.

The Proposed Action and alternatives in Segment 5 are within the Lower Malheur, Lower Owyhee and Middle Snake-Succor watersheds (5th level HUCs). The 6th level subwatershed HUCs that would be affected are listed in Table A-1 of the Supplemental Fisheries Analysis (in Appendix B.5 part 2). Maps of the effected 6th level HUCs showing all proposed stream crossings by stream category and crossing type are also presented in Appendix B.5 part 1. Table 3-88 summarizes the impacts to fish species and habitats in Segment 5.

Table 3-88. Summary of Impacts to Fish Species and Habitats, Segment 5

Proposed Action/ Alternative	No. of Crossings compared to Proposed Action (acres)	Construction Ground Disturbance within 500 Feet (acres)	Crossings with Listed or Sensitive Fish Species Present at or within 1000 Feet of Crossing				Ground Disturbance within 1,000 Feet of EFH and CH (acres)
			Bull Trout	Redband Trout	Snake River Basin Steelhead	Spring and Summer-Run Chinook	
Proposed Action			N	Y	N	N	0 acres
Malheur S Alternative	66 acres more than Proposed Action	70 acres more than Proposed Action	N	Y	N	N	0 acres
Malheur A Alternative	60 acres more than Proposed Action	170 acres more than Proposed Action	N	Y	N	N	0 acres
Double Mountain Alternative	11 acres more than Proposed Action	36 acres more than Proposed Action	N	N	N	N	0 acres

Table Abbreviations: N = not present; Y = yes present; EFH = Essential Fish Habitat; CH = critical habitat

Proposed Action

The Proposed Action in Segment 5 has 42 stream crossings with a total of 1.9 acres of disturbance. Of the 42 stream crossings, 36 would cross intermittent streams with drive through fords, 3 would cross perennial streams and 3 would cross a ditch or canal at culverts. The streams in the analysis area are not known to support anadromous fish species. Redband trout are known to occur at five stream crossings in the Becker Creek-Willow Creek, Swede Flat Creek-Cottonwood Creek and South Alkali Creek-Succor Creek subwatersheds.

Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats in Segment 5 would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout are present at 3 of the proposed road stream crossings in the Becker Creek-Willow Creek, Swede Flat Creek-Cottonwood Creek and South Alkali Creek-Succor Creek subwatersheds. Short-term direct and indirect construction effects to redband trout for the Proposed Action in Segment 5 would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No critical habitat or Essential Fish Habitat is present in the analysis area of the Proposed Action in Segment 5.

Malheur S Alternative

The Malheur S Alternative crosses 33.6 miles and has 66 more stream crossings than the Proposed Action. Sixty five access roads would cross intermittent streams with drive through fords, 3 would cross perennial streams and 2 would cross a ditch or canal at culverts. The streams in the Malheur S Alternative analysis area are not known to support anadromous fish populations; however, resident fish (redband trout) are known to occur at or within 1,000 feet at 3 of the proposed road stream crossings within the Tunnel Canyon-Owyhee River and South Alkali Creek-Succor Creek subwatersheds. There are 0.8 miles of fish bearing streams within 500 feet of new or existing roads in need of improvements. The construction or improvements of these roads would result in 1.8 acres of disturbance within 500 feet of fish bearing streams.

Direct and indirect short-term construction effects of the Malheur S Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout are present at 3 of the proposed road stream crossings within the Tunnel Canyon-Owyhee River and South Alkali Creek-Succor Creek subwatersheds. Short-term direct and indirect construction effects to redband trout for the Malheur S Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low because disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH or EFH is present in the analysis area of the Malheur S Alternative.

Malheur A Alternative

The Malheur A Alternative crosses 33.2 miles and has 60 fewer road stream crossings than the Proposed Action. Of 64 stream crossings, 59 would cross intermittent streams with drive through fords, 3 would cross perennial streams and 2 would cross a ditch or canal at culverts. The Malheur A Alternative is not known to support anadromous fish populations; however, resident fish (redband trout) are known to occur at or within 1,000 feet at 2 of the proposed crossings within the South Alkali Creek-Succor Creek subwatershed. There are 0.7 miles of fish bearing streams within 500 feet of existing roads in need of improvements. The improvements of these roads would result in 1.6 acres of disturbance within 500 feet of fish bearing streams.

Direct and indirect short-term construction effects of the Malheur A Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout occur at 2 of the proposed crossings within the South Alkali Creek-Succor Creek subwatersheds. Short-term direct and indirect construction effects to redband trout for the Malheur A Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH or EFH is present in the analysis area for the Malheur A Alternative.

Double Mountain Alternative

The Double Mountain Alternative crosses 7.4 miles and has 12 stream crossings for a total of 0.27 acres of disturbance. Of the 12 crossings, 11 are along intermittent streams with drive though fords and 1 is along a perennial stream at a culvert. The streams in the analysis area for the Double Mountain Alternative are not known to support any resident or anadromous fish populations and there are no fish bearing streams within 500 feet of a new or existing road. No CH EFH is present in the analysis area for the Double Mountain Alternative.

Direct and indirect short-term construction effects of the Double Mountain Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Sensitive species are not present in the analysis area for the Double Mountain Alternative.

Protected Fish Habitats

No critical habitat or Essential Fish Habitat is present in the analysis area for the Double Mountain Alternative.

SEGMENT 6—TREASURE VALLEY SEGMENT

Proposed Action

The Proposed Action and alternatives in Segment 6 are within the Middle Snake-Succor watershed (5th level HUC). The 6th level subwatershed HUCs that would be affected are listed in Table B.5-1 in Appendix B.5. Maps of the affected 6th level HUCs showing all proposed stream crossings by stream category and crossing type are also presented in Appendix B.5. Table 3-89 summarizes the impacts to fish species and habitats in Segment 6.

Table 3-89. Summary of Impacts to Fish Species and Habitats, Segment 6

Proposed Action/ Alternative	No. of Crossings (acres)	Ground Disturbance within 500 Feet (acres)	Crossings with Listed or Sensitive Fish Species Present at or within 1000 Feet of Crossing				Ground Disturbance within 1,000 Feet of EFH and CH (acres)
			Bull Trout	Redband Trout	Snake River Basin Steelhead	Spring and Summer-Run Chinook	
Proposed Action	53 acres	260 acres	N	Y	N	N	0 acres

Table Abbreviations: N = not present; Y = Yes present; CH = critical habitat

The Proposed Action in Segment 6 has 53 stream crossings with a total of 1.8 acres of disturbance. Of the 53 stream crossings, 44 would cross intermittent streams with drive through fords, 2 would cross perennial streams and 7 would cross a ditch or canal at culverts. The streams in the area are not known to support anadromous fish species. Redband trout are known to occur at three access road stream crossings in the Hardtrigger Creek and Lower Reynolds Creek subwatersheds.

Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats in Segment 6 would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Federally Listed and Candidate Species

None present.

BLM, USFS, and State Sensitive Species

Redband trout are known to occur at three access road stream crossings in the Hardtrigger Creek and Lower Reynolds Creek subwatersheds. Short-term direct and indirect construction effects to redband trout for the Proposed Action in Segment 6 would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).

Protected Fish Habitats

No CH EFH is present in the analysis area for the Proposed Action in project Segment 6.

3.2.5.7 Mitigation Planning

Appendix D contains a Framework for Development of Compensatory Mitigation Plans that addresses sensitive and special status aquatic species and habitats including bull trout and redband trout, Middle Columbia River steelhead; Snake River Basin steelhead; Snake River Chinook salmon and EFH for salmon. The Framework describes the following mitigation hierarchy:

1. Avoidance: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity and prevent damage to ecosystem services.
2. Minimization: measures taken to reduce the duration, timing, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.
3. Rehabilitation/Restoration/Rectification: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimized.
4. Offset (also referred to as Compensatory Mitigation): measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimized and/or rehabilitated or restored, in order to achieve no net loss or a net gain of biodiversity and ecosystem services. Compensatory mitigation can include the restoration of degraded habitats, improvement of marginal habitats, creation of new habitats, protection of threatened habitats, or a combination thereof.

Pursuant to the Framework, specific mitigation plans for the listed special status fish species and designated habitat would be developed and finalized as conditions of approval for the B2H Project.

3.2.6 LAND USE, AGRICULTURE, RECREATION, TRANSPORTATION

3.2.6.1 INTRODUCTION

This section describes land uses, agricultural resources, recreation, and transportation of the region within eastern Oregon and western Idaho that would be affected by the proposed B2H Project. These resources are grouped into three subsections: Land Use and Agriculture; Recreation; and Transportation. The regulatory framework, issues identified for analysis, methodology, affected environment and environmental consequences are described for each resource.

3.2.6.2 REGULATORY FRAMEWORK—LAND USE AND AGRICULTURE

FEDERAL

Land uses on federal lands in the analysis area are governed by various land-use plans, including three Bureau of Land Management (BLM) Resource Management Plans (RMPs), one United States Forest Service (USFS) Land and Resource Management Plan (LRMP), and one Bureau of Reclamation (Reclamation) RMP. These plans establish management goals, objectives, and standards for the BLM, USFS, and Reclamation management units. In areas where a transmission line is inconsistent with some portion of a plan, the line may be prohibited, or an amendment to the plan may be needed to approve the project. Potential plan amendments that may be necessary to approve the B2H Project are discussed in Section 3.4 Plan Amendments.

Table 3-90 identifies administrative units and applicable plans in the project area.

Table 3-90. Federal RMPs and LRMP

Administrative Unit	Applicable Plan Name	Plan Year
BLM Idaho, Boise District, Owyhee Field Office	Owyhee RMP	1999
BLM Oregon, Vale District, Jordan/Malheur Resource Area	Southeastern Oregon RMP [1]	2002
BLM Oregon, Vale District, Baker Resource Area	Baker RMP [2]	1989
USFS Wallowa-Whitman National Forest	Wallowa-Whitman National Forest LRMP	1990
Bureau of Reclamation	Owyhee Reservoir RMP	1994

Table Abbreviations: RMP = resource management plan; LRMP = land and resource management plan.

Table Notes: [1] The Southeastern Oregon RMP includes management direction for the Jordan Resource Area, which is not crossed by the project. [2] The Baker RMP is currently under revision.

BLM RESOURCE MANAGEMENT PLANS

The BLM land-use planning process (43 CFR 1610) combines Section 202 of the Federal Land Policy and Management Act (FLPMA) of 1976 and National Environmental Policy Act (NEPA) of 1973 regulations. The BLM RMPs provide land-use planning and management direction on a broad scale and guide actions on BLM-administered lands. Land-use plan decisions consist of desired outcomes (goals and objectives) and allowable uses and management actions. Land-use plans are used by managers to allocate resources and determine appropriate multiple uses for public lands, develop a strategy to manage and protect resources, and set up systems to monitor and evaluate status of resources and the effectiveness of management practices over time.

Land-use plans and planning decisions are the basis for every on-the-ground action the BLM undertakes. Land-use plans ensure public lands are managed under the principles of multiple use and sustained yield. As required by FLPMA and BLM policy, public lands must be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water-resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; that will provide for outdoor recreation and human occupancy and use; and that recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from public lands by encouraging collaboration and public participation throughout the planning process (BLM 2011c).

The B2H Project would cross BLM-administered lands managed under the Baker RMP in Oregon (BLM 1989), the Southeastern Oregon RMP in Oregon (BLM 2002), and Owyhee RMP in Idaho (BLM 1999).

Baker Resource Management Plan

The Baker RMP/Record of Decision (ROD) (BLM 1989) provides direction for managing public lands under the jurisdiction of the Vale District Office within the Baker Resource Area. The RMP planning area encompasses approximately 429,754 acres bordered by the Snake River to the east, the Oregon–Washington state line and the Columbia River to the north, and by Gilliam, Wheeler, Grant, and Malheur counties to the west and south.

The lands managed under the Baker RMP include a forestland base of 88,603 acres; 29,330 acres are commercial forestland and 59,273 acres are woodlands. Grazing permits/leases are authorized for 55,437 animal unit months of livestock forage on 418,601 acres (374 allotments). Off-highway vehicle (OHV) use is open on approximately 287,611 acres, limited on 138,042 acres, and closed on 4,101 acres of public lands. Nine areas totaling 38,988 acres are designated as Areas of Critical Environmental Concern (ACECs), one area is designated as an outstanding natural area, and one as a Research Natural Area (RNA). The plan includes provisions to protect or enhance cultural resources, soil, water, botanical resources, visual resources, recreational opportunities, and other resources.

Currently the BLM is revising the RMP for the Baker Resource Area. The Draft RMP/EIS was published in November 2011 (BLM 2011b). The schedule for completion of the revision to the Baker RMP has been delayed pending a decision on management of Greater Sage-Grouse. The BLM published the Oregon Sub-Region Greater Sage-Grouse Draft Resource Management Plan Amendment and Environmental Impact Statement in November, 2013 (BLM 2013a). The Greater Sage-Grouse RMP amendment would amend the Baker RMP to provide additional conservation measures for Greater Sage-Grouse and their habitats. The schedule for completion of the Greater Sage-Grouse RMP amendment is spring of 2015. However, the resource allocations and management direction of the 1989 Baker RMP are the basis for the analysis in this EIS. The agency preferred alternative of the draft RMP/EIS (Alternative No.1 in the 2011 DEIS) and the Greater Sage-Grouse preferred alternative (Alternative D in the 2013 DEIS) are addressed as reasonably foreseeable future actions under Cumulative Effects (Section 3.3).

Southeastern Oregon Resource Management Plan

The Southeastern Oregon RMP (BLM 2002) provides direction for managing public lands within the Malheur and Jordan Resource Areas of the BLM Vale District. The Southeastern Oregon RMP planning area covers approximately 4.6 million acres of BLM-administered land mainly located in Malheur County, with some lands in Grant, Harney and Baker counties. The planning area is bounded on the east by Idaho, on the south by Nevada, on the north by the Vale District's Baker Resource Area, and on the west by the BLM Burns District's Three Rivers and Andrews resource areas. Most of the public land is contiguous, with some scattered or isolated parcels.

The RMP includes provisions to improve or maintain upland conditions (including forest, woodland, and rangeland), riparian conditions, fish and wildlife habitat, botanical resources, and special status species.

The Southeastern Oregon RMP establishes guidance for managing a broad spectrum of land uses and allocations including livestock grazing management (168 allotments, 444,295 AUMs, 5,928,256 acres), wild horse herd/management areas (17), land-tenure adjustments, OHV designations (15,826 acres are closed, 2,004,369 acres are limited to designated OHV use, and 2,615,066 acres are open), 32 WSAs (1,115,287 acres), 4 suitable National Wild and Scenic Rivers (WSR) (42.5 miles), 28 ACECs/RNAs (206,905 acres) caves, historic interpretive sites and districts, national trails, and other areas of national significance. Approximately 4,407 acres of forestland are available for commercial timber harvest, and 124,500 acres of western juniper are available for treatment to restore pre-settlement conditions. Approximately 5,877 acres of forested land are managed to preserve or create old-growth forest characteristics. The Southeastern Oregon RMP also designates new utility corridors ranging from 500 to 6,000 feet on each side of the centerline of existing facilities.

The Southeastern Oregon RMP will be amended by the 2013 Oregon Sub-Region Greater Sage-Grouse Draft Resource Management Plan Amendment and Environmental Impact Statement to provide additional conservation measures for Greater Sage-Grouse and their habitats. The Greater Sage-Grouse plan amendment is currently scheduled for release with a final decision in late spring of 2015. Anticipated changes to the Southeastern Oregon RMP are addressed as reasonably foreseeable future actions under Cumulative Effects (Section 3.3).

Owyhee Resource Management Plan

The area managed under the Owyhee RMP (BLM 1999) is bounded on the west by Oregon, on the south by Nevada, on the north by the Snake River, and on the east by Castle Creek, Deep Creek, the Owyhee River, and Duck Valley Indian Reservation. Most of the public lands are contiguous, with only a few scattered or isolated parcels. Approximately 1,320,032 acres are managed by the BLM under the Owyhee RMP. The resource area includes the northern extent of the Owyhee Mountain Range and lies within what is often referred to as the Columbia Plateau, an elevated plateau with mountains separated by canyons draining to the Pacific Ocean via the Snake and Columbia rivers.

The Owyhee RMP establishes guidance for managing a broad spectrum of land uses and allocations, including livestock grazing management (153 allotments, 135,116 AUMs, and 1,605,155 acres), wild-horse management, land-tenure adjustments, OHV designations (101,994 acres are closed, 1,217,846 are limited, and 192 are open), 6 designated WSRs (136 miles), wilderness areas (243,750 acres), and 13 ACECs (167,372 acres). The RMP contains resource objectives, land-use allocations, management actions, and direction needed to achieve program and multiple-use goals. The Owyhee RMP designates public recreational lands within the jurisdiction of the RMP into 1 of 5 Recreation Opportunity Spectrum (ROS) classes: urban, roaded natural, semi-primitive non-motorized, semi-primitive motorized, and primitive.

Public lands within the resource area are available for transportation and utility rights-of-way except where specifically prohibited by laws or regulations (such as wilderness areas) and in areas specifically identified as avoidance and exclusion areas to protect high-resource values. The Proposed Action crosses the northern edge of the BLM Owyhee Field Office. No access restrictions apply to this area.

The BLM published the Idaho and Southwestern Montana Greater Sage-Grouse Land Use Plan Amendment and Environmental Impact Statement in November, 2013 BLM 2013b).The Greater Sage-Grouse LUP amendment will amend the Owyhee RMP to provide additional conservation measures for Greater Sage-Grouse and their habitats.

Wilderness

Wilderness Act of 1964; (16 U.S.C. 1131-1136)

Designated by Congress, wilderness areas are defined as, "…an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain…" and as "Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." Wilderness Areas are part of the National Landscape Conservation System.

Wilderness Areas are managed pursuant to the Wilderness Act, Wilderness Management Regulations at 43 CFR Part 6300, BLM's Wilderness Management Manual (MS 6340), an area-specific Wilderness Management Plan, and any unique provisions of the Wilderness Area's enabling legislation.

BLM Manual 6340 – Management of Designated Wilderness Areas (Public)

This manual provides "… guidance … on managing BLM lands that have been designated by Congress as part of the National Wilderness Preservation System. The lands are also managed as part of the BLM's National Landscape Conservation System." It outlines the BLM's objectives with the manual "… to manage and protect BLM wilderness areas in such a manner as to preserve wilderness character; manage wilderness for the public purposes of recreational, scenic, scientific, education, conservation, and historic use while preserving wilderness character; and effectively manage uses permitted under

Section 4(c) and 4(d) of the Wilderness Act of 1964 while preserving wilderness character" (BLM 2012d). No alternative route study corridor would cross a wilderness area.

Wilderness Study Areas (WSAs)

FLPMA of 1976 (43 U.S.C. 1782) (BLM 2001a)

Similar to wilderness areas, WSAs are part of the National Landscape Conservation System. In contrast, WSAs were designated through an inventory and study of roadless areas on BLM-administered lands. A final decision by Congress on whether to designate a WSA as a Wilderness Area or to release the area from further consideration is pending. Until a decision is made by Congress on whether to designate these areas, WSAs are protected to maintain their suitability for potential future designation as wilderness (BLM 2013).

All WSAs, must have met the following criteria:

- Size – generally, a roadless area that is at least 5,000 acres
- Naturalness – generally appears to be only affected by the forces of nature
- Opportunities – provides outstanding opportunities for solitude, or primitive and unconfined types of recreation in at least part of the area
- Supplemental Values –May also contain ecological, geological, or other features of scientific, educational, scenic, or historical value

For WSAs, FLPMA mandates that the BLM "not impair the suitability" of areas identified as "having wilderness characteristics" (BLM 2012c). BLM's authority to establish new WSAs has since expired. WSAs are managed pursuant to Section 603 of FLPMA and BLM's WSA Management Manual (MS 6330).

BLM Manual 6330 – Management of Wilderness Study Areas (Public)

This manual provides, "…policy on the non-impairment standard … for use when managing Wilderness Study Areas (WSAs), which are part of the BLM's National Landscape Conservation System. Specifically, this policy applies to: (1) WSAs identified by the wilderness review required by Section 603 of the Federal Land Policy and Management Act (FLPMA) and currently under review by Congress…; (2) legislative WSAs (WSAs established by Congress)… ; and (3) WSAs identified during land use planning process under the authority of Section 202 of FLPMA…" (BLM 2012c). The objectives outlined in the manual for WSAs include, "manage and protect WSAs to preserve wilderness characteristics so as not to impair the suitability of such areas for designation by Congress as wilderness [and] provide policy guidance for prolonged stewardship of WSAs until Congress makes a final determination on the management of the WSAs" (BLM 2012d). Neither the Proposed Action nor any of the alternatives cross a WSA.

FLPMA of 1976 (43 U.S.C. 1711-1712)

Pursuant to Section 201 of FLPMA, the BLM is required to maintain on a continuing basis an inventory of all public lands and their resources and other values. This inventory requirement includes maintaining information regarding wilderness characteristics. Section 201 also provides that the preparation and maintenance of the inventory will not change or prevent change of the management or use of the lands.

Section 202 of FLPMA requires BLM to rely on the resource inventories in the development and revision of land use plans, including inventory information regarding wilderness characteristics. The wilderness resource, including lands with wilderness characteristics, is one of the resources which BLM manages under the multiple-use and sustained-yield direction contained in Section 202 of FLPMA.

Two BLM Manuals also provide guidance to BLM for inventorying and managing lands with wilderness characteristics.

LANDS WITH WILDERNESS CHARACTERISTICS

BLM Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands (Public)

"This policy contains the BLM guidance and general procedure for conducting wilderness characteristics inventories under Section 201 of FLPMA and supersedes all previous guidance on this topic." Under this policy the BLM will conduct inventories of public lands for the presence or absence of wilderness characteristics, by considering the "…validity of proposed boundaries of the area(s), the existence of wilderness inventory roads and other boundary features, the size of the area(s), and the presence or absence of wilderness characteristics." Once these areas have been identified, they are assessed for size, naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation (BLM 2012a).

Lands with wilderness characteristics are only addressed for those areas crossed by the project right-of-way, because BLM Manual 6310 directs that the effects of activities outside an area not influence outstanding opportunities for solitude determinations unless they are pervasive and omnipresent (BLM 2012a).

BLM Manual 6320. For considering lands with wilderness characteristics in the BLM Land Use Planning Process (Public)

This manual establishes BLM policy on considering lands with wilderness characteristics in land use plans and land use plan amendments and revisions in accordance with FLPMA and other applicable authorities. By using the land use planning process, the BLM can determine how to manage the lands with wilderness characteristics as part of the BLM's multiple-use mandate. A NEPA document will be completed to reach a planning decision for these areas, outlining the management actions with allowable uses and restrictions (i.e., right-of-way exclusion or avoidance area) (BLM 2012b).

In addition, for lands within the Vale District that are within the planning area for the Southeastern Oregon RMP, a court-approved settlement agreement also sets out certain requirements that BLM must follow until BLM completes an RMP amendment for the Southeastern Oregon RMP (Settlement Agreement Between the Oregon Natural Desert Association, Committee for the High Desert, Western Watersheds Project, and the BLM (June 7, 2010). In particular, the settlement agreement precludes BLM from approving any surface-disturbing activity on lands that BLM has identified as having wilderness characteristics if BLM finds that the project would either diminish the size of the inventory unit or cause the entire inventory unit to no longer meet the criteria for wilderness character.

The potential effects of a proposed action on lands with wilderness characteristics and compliance with any management-level decisions (established in BLM RMPs) for the areas must be considered by the BLM when making project-level decisions.

The BLM Malheur Resource Area has recently completed inventory updates for lands with wilderness characteristics, and is in the process of amending its RMP (the Southeastern Oregon RMP) to consider those areas found to possess wilderness characteristics.

Wild and Scenic Rivers

BLM Manual 6400 – Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management (Public).

BLM Manual 6400 (BLM 2012e) contains the BLM's policy and program direction for the identification, evaluation, and management of eligible and suitable wild and scenic rivers (WSRs) and the management of designated components of the National Wild and Scenic Rivers System (National System). This program guidance is provided to fulfill obligations contained in the Wild and Scenic Rivers Act of 1968, as amended (16 U.S.C. 1271-1287), and other relevant laws and policies. Eligible and suitable WSRs are managed by the BLM's National Landscape Conservation System (NLCS) where the river is located inside an NLCS unit, and eligible and suitable rivers are managed by the BLM's Assistant Director, Natural Resources and Planning, where the river is located outside an NLCS unit. Designated WSRs are managed by the BLM's NLCS. The manual provides policy and program guidance for WSRs consistent with the NLCS mission of conserving, protecting, and restoring nationally significant landscapes recognized for their outstanding cultural, ecological, and scientific values.

Neither the Proposed Action nor any alternatives cross a BLM or USFS designated WSR. However, the Proposed Action and two alternatives cross a portion of the BLM Owyhee River Below the Dam ACEC where the river may be suitable as a WSR.

USFS Land and Resource Management Plans

A LRMP provides direction for all resource management activities on a national forest. An approved LRMP is the product of a process established by Congress in the National Forest Management Act 1976. A LRMP allocates land for timber production, oil and gas leasing, and other resource management activities. It designates areas for recreation and recommends the establishment of wilderness, WSRs, and other special designations. The LRMP describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management. The management direction provided by the LRMP comprises the framework within which project planning and activities take place. USFS plans establish standards for resource management, either forest wide or for specific management areas.

Wallowa-Whitman National Forest Land and Resource Management Plan

The Wallowa-Whitman National Forest includes over 2.3 million acres of land in northeastern Oregon. The Wallowa-Whitman National Forest LRMP (USFS 1990) guides natural resource management activities for the Wallowa-Whitman National Forest, those portions of the Nez Perce and Payette National Forests that are administered by the Wallowa-Whitman National Forest, and other lands within the Hells Canyon National Recreation Area. The LRMP was developed under a process established by the National Forest Management Act. The LRMP establishes Forest-wide multiple-use goals and objectives; Forest-wide standards and guidelines; and sets prescriptions, standards, and guidelines for each management area identified in the LRMP.

The Wallowa-Whitman National Forest includes two wilderness areas, plus portions of two others, for a total designated wilderness of 582,700 acres (approximately 25 percent of the Forest). There are 10 WSRs on the Wallowa-Whitman National Forest for a total of 269 miles. Of the 2.3 million acres of this National Forest, approximately 1.3 million acres (57.5 percent of the forest) are classified as suitable for livestock grazing. About 1.09 million acres (46 percent of the Wallowa-Whitman Forest) are classified as suitable for timber management. Approximately 173,000 acres on the Wallowa-Whitman National Forest comprise 131 specifically defined areas varying in size from 100 to 3,000 acres that are managed for old-growth forest conditions. The Wallowa-Whitman Forest includes approximately 9,300 miles of road (7,000 miles of which are open for use), 2,900 miles of winter and summer trails, and 5 landing strips. The LRMP states that when applications for rights-of-way for utilities are received, the Forest's first priority will be to utilize residual capacity in existing rights-of-way. Additional utility rights of way or corridors may be identified and approved subject to site-specific environmental analysis (USFS 1990).

Bureau of Reclamation Resource Management Plans

Reclamation's RMPs provide a guide for creating a balance for resource development, recreation, and protection of natural and cultural resources for the lands and waters they manage.

Owyhee Reservoir Resource Management Plan

The Owyhee Reservoir RMP (Reclamation 1994) defines the resource management activities and guidelines needed to preserve and protect the existing land and water resources administered by Reclamation in the vicinity of the Owyhee Reservoir in Malheur County, Oregon. The RMP planning area includes approximately 26,190 acres of land and 12,740 acres of water surface (at full-pool elevation of 2,670 feet) comprising lands adjacent to the Owyhee Reservoir and parts of the Owyhee River system above and below the reservoir.

The RMP was developed in cooperation with several other agencies to balance desired public recreational uses of Reclamation lands and waters with the protection and improvement of existing resources specific to the Owyhee Reservoir study area. The Owyhee Reservoir provides irrigation water to 118,249 acres, which encompass 1,845 farm units and 8 towns in Malheur County, Oregon, and Owyhee County, Idaho. Land-use agreements have allowed for the establishment of the Owyhee State Park, the Lake Owyhee Resort, and the Pelican Point Airstrip along with other recreational activity sites within the RMP study area.

The Vale Project

The Bureau of Reclamation Vale Project lands are located along the Malheur River and Willow Creek in east-central Oregon, surrounding the town of Vale. The project furnishes irrigation water to 35,000 acres of land. Features include Agency Valley Dam and Beulah Reservoir, Bully Creek Dam and Reservoir, Harper Diversion Dam, Vale Main Canal, and a distribution and drainage system. This water supplies lands on the west side of the Malheur River from Lime to Vale, and along Willow Creek from Vale to the vicinity of Jamieson, Oregon. A siphon, 1.5 miles southwest of Little Valley, conveys water to the Little Valley Canal, on the east side of the Malheur River in the vicinity of Little Valley. Excess water from the Malheur River is diverted to Bully Creek Reservoir through the Vale Main Canal, and through the Bully Creek Feeder Canal that delivers water from the Main Canal, heading about 8 miles west of Vale, Oregon. Water stored in Bully Creek Reservoir is delivered by two laterals, one beginning at the outlet works of the dam and the other at Bully Creek Diversion Dam about a mile downstream from the reservoir.

Energy and Utility Corridors

Utility corridors are designated in BLM and USFS land-use plans and most recently the West-Wide Energy corridor Records of Decision (BLM 2009; USFS 2009a). In response to Section 368 of the Energy Policy Act of 2005, a Programmatic EIS has been developed for West-Wide Energy corridor corridors in the 11 western states (Washington, Oregon, Idaho, Montana, Wyoming, California, Nevada, Utah, Colorado, Arizona, and New Mexico). The U.S. Department of Energy (DOE) and the BLM were the lead federal agencies, and the USFS and other agencies were cooperators for the designation of energy corridors on federal land in 11 western states (DOE/EIS-0386). A final Programmatic EIS was published on November 28, 2008 (DOE and BLM 2008). The West-Wide Energy corridor Records of Decision for the BLM and USFS signed January 14, 2009, designate energy corridors and provide guidance, interagency operating procedures (IOPs), and mitigation measures to be used where linear facilities are proposed crossing public lands. Where the PEIS identifies new corridors for the managing agencies, the BLM and USFS RODs also amend relevant land-management plans (LMP) to include the new corridor. The designation of corridors does not require their use, nor does such designation exempt federal agencies from conducting an environmental review on each project. The BLM's West-Wide Energy corridor ROD amended the Baker RMP, the Southeastern Oregon RMP, and the Owyhee RMP by designating two West-Wide Energy corridors. West-Wide Energy corridor 11-228 follows an existing 500-kV transmission line in Owyhee and Malheur counties. West-Wide Energy corridor 250-251 generally parallels I-84 in Malheur and Baker counties.

A settlement agreement filed July 3, 2012, in the federal case *The Wilderness Society et al. v. United States Department of Interior et al.*, No. 3:09-cv-03048-JW (N.D. Cal.) provides for periodic review of West-Wide Energy corridors identified in the final Programmatic EIS. The agreement also provides for periodic review and update of the IOPs contained in the ROD, so the IOPs identified for implementation in the Final Boardman to Hemingway EIS may differ from those presented in this Draft EIS.

Some federal and county land-use plans require the use of existing rights-of-way or designated utility corridors for new utility projects. Section 503 (43 U.S.C. 1763) of the FLPMA encourages the BLM and USFS to use existing corridors to the extent practical in order to minimize adverse environmental impacts and the proliferation of separate rights-of-way. Per county codes and/or ordinances, Malheur, Umatilla, and Union Counties encourage the development of transmission lines on existing transmission line rights-of-way wherever possible. None of the counties within the analysis area have designated utility corridors.

Military Training Routes

Military training routes (MTRs) are aerial corridors used solely by military aviation for training flights. The routes are the result of a joint venture between the Federal Aviation Administration (FAA) and the Department of Defense (DoD) to provide for high-speed, low-level military activities. MTRs are divided into instrument routes (IR) and visual routes (VR). Each route is identified by either of these 2 letters followed by either 4 digits for routes below 1,500 feet above ground level or 3 digits for routes extending at least 1 leg above 1,500 feet above ground level. IR routes are flown under air-traffic control, while VR routes are not. Each route is defined by a number of geographical coordinates. The MTRs are individually operated through one of the local military air bases. Unless noted on the air navigation chart, aircraft may fly as low as 100–110 feet above ground level in the B2H Project area along these military routes. Figure 3-31 shows the location of MTRs, VRs, and IRs in the B2H Project area.

Intentional Destructive Acts

Intentional destructive acts, that is, acts of sabotage, terrorism, vandalism, and theft, sometimes occur at power utility facilities. Vandalism and thefts are most common, especially of metal and other materials that can be sold. However, given the extensive security measures that public and private utilities, energy resource developers, and federal agencies such as the U.S .Department of Homeland Security have and are continuing to implement to help prevent such acts and protect their facilities, along with the inherent difficulty in significantly affecting such large and well-constructed facilities as transmission towers and substation sites, it is considered extremely remote and unlikely that a significant terrorist or sabotage act would occur.

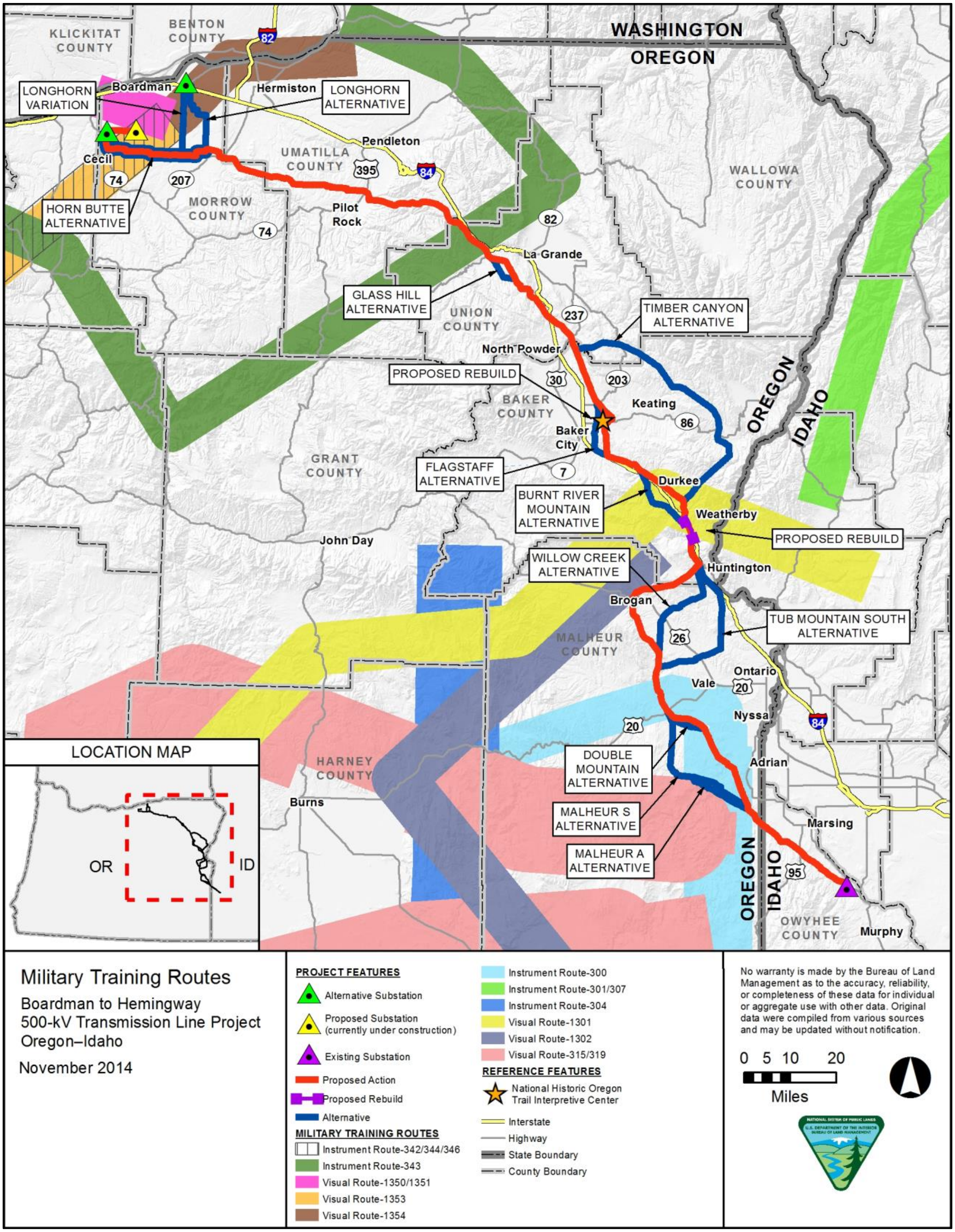


Figure 3-31. Military Training Routes

Tribal Rights and Interests

The federal government has a unique and distinctive relationship with tribes as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, judicial decisions, and agreements. The United States government has a trust responsibility to federally recognized American Indian tribes that covers lands, resources, money, or other assets held by the federal government in trust and the ability of those tribes to exercise their tribal rights. The United States recognizes American Indian tribes as sovereign nations. The tribes maintain active interests in the planning area. Tribal members use public lands to gather plants or other native materials), hunt animals, and fish.

BLM consultation with American Indian Tribes, as it pertains to tribal interests, treaty rights and trust responsibilities, is conducted in accordance with the following direction:

- Bureau Manual Handbook H-8120-1 – Guidelines for Conducting Tribal Consultation (Transmitted 12/03/04).
- The National Historic Preservation Act of 1966 as amended (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470
- Archaeological Resources Protection Act of 1979 (P.L. 96-95; 93 Stat. 721; 16 U.S.C. 47Oaa et seq.) as amended (P.L. 100-555; P.L. 100-588)
- American Indian Religious Freedom Act of 1978 (P.L. 95-431; 92 Stat. 469; 42 U.S.C. 19960
- Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001)
- Executive Order No. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994.
- Executive Order No. 13007 – Indian Sacred Sites, May 24, 1996.
- Executive Order No. 13084 – Consultation and Coordination with Indian Tribal Governments, May 14, 1998.
- Government-to-Government Relations with Native American Tribal Governments (Memorandum signed by President Clinton; April 29, 1994).
- Order No. 3175 – Departmental Responsibilities for Indian Trust Resources (Section 2 of Reorganization Plan No. 3 of 1950 – 64 Stat. 1262; November 8, 1993).

The Burns Paiute Tribe, the Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Nez Perce Tribe, the Shoshone-Bannock Tribes of the Fort Hall Reservation, Shoshone-Paiute Tribes of the Duck Valley, and the Fort McDermitt Paiute and Shoshone Tribes consider portions of the project area to be part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. Members of the interested tribes to this proposed action exercise their hunting, fishing, and gathering rights on federal lands outside of the boundaries of their reservations.

Confederated Tribes of the Umatilla Indian Reservation

The Umatilla Indian Reservation was created by the Treaty with the Walla Walla, Cayuse and Umatilla in 1855, under which the Cayuse, Umatilla and Walla Walla ceded more than 6 million acres of their traditional territory in northeast Oregon and southeast Washington. Today the Umatilla Indian Reservation is approximately 172,000 acres. A portion of the B2H Project area is located within lands ceded to the U.S. government by the 1855 Treaty. The CTUIR have reserved explicit hunting, fishing, gathering and pasturing rights in that treaty. Exercise of treaty rights could include, but is not limited to, water rights, taking fish, mineral rights, collection of plant resources such as roots and berries, and hunting of small and large game for economic, religious, and cultural use. Treaty rights also include pasturing stock on open and unclaimed lands. The CTUIR actively works with the United States Government in natural resources planning efforts to protect their off-reservation treaty rights. Off-reservation resources on federal lands that Indian Tribes may have legal interests in are commonly referred to as Indian Trust Assets.

Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

Through Government-to-Government consultation with the BLM, the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation maintain that the Tribes possess “aboriginal title” to lands within the project area. The Shoshone-Paiute Tribes of the Duck Valley Indian Reservation assert aboriginal rights to their traditional homelands. The Shoshone-Paiute Tribes believe that title to these lands has not been relinquished and they continue to claim title, rights, and interests associated with these lands. They are a contemporary living and dynamic culture with roots in past practices that still practice their traditions within the project area, and therefore any project impacts are of concern to the Tribes. In addition, the Tribes are concerned about project effects on cultural resources considered to be culturally or spiritually important that are beyond the scope of Section 106 of the National Historic Preservation Act. These resources may include aspects of the importance and interrelatedness of plants, animals, humans, objects, viewsheds, landscapes, and places in the continuing social, cultural, and spiritual fabric of the Shoshone-Paiute Tribes.

Shoshone-Bannock Tribes of the Fort Hall Reservation

On July 3, 1868, the Eastern Band Shoshone and Bannock Tribes and the United States signed the Treaty, referred to as the Fort Bridger Treaty (15 Stat. 673). In the treaty the Tribes reserved certain off-reservation hunting, fishing, and gathering rights. The Bannock and other bands of Shoshone were guaranteed a permanent homeland as well which ended up being in southeast Idaho, known as the Fort Hall Indian Reservation. The Fort Bridger Treaty provides enumerated rights, including those under Article IV which states the Tribes “…have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts”.

Indian Reservations

The Proposed Action and alternatives do not cross any American Indian reservations. Although, the project analysis area includes 21.5 acres of the Umatilla Indian Reservation in Umatilla County, Oregon and will examine indirect impacts of the project on Confederated Tribes of the Umatilla Reservation (CTUIR) lands. Land use on the Umatilla Indian Reservation is governed by the Land Development Code. However, since the Proposed Action and alternatives do not cross any American Indian reservations the Land Development Code does not govern the placement of the transmission lines.

STATE OF OREGON

OREGON ENERGY FACILITY SITING COUNCIL

In Oregon, the Oregon Department of Energy (ODOE), through the Energy Facility Siting Council (EFSC), oversees the siting and construction of large energy facilities to ensure these facilities are located, built and operated in ways that protect the environment and public health and safety and ensure system reliability. The B2H Project must meet the EFSC's siting standards, and the EFSC must issue a site certificate for the facility before construction can occur. Upon issuance, the site certificate requires state agencies and local governments to issue all permits, licenses, and certificates for the construction and operations of the facility set forth for in the site certificate (ORS 469.401).

Before issuing a site certificate, EFSC must conclude that the project is consistent with Oregon's land-use policies as set forth in the statewide planning goals. The EFSC land use standards are set forth in ORS 469.504 and Oregon Administrative Rule (OAR) 345-022-0030. ORS 469.504 authorizes an applicant for a site certificate to choose between two methods for demonstrating compliance with the statewide planning goals: 1) by receiving approval for the facility from each affected local government (Path A) or 2) by electing to have EFSC make the necessary findings that the proposed facility will comply with the statewide planning goals (Path B). For the B2H Project, IPC has elected to demonstrate compliance with statewide planning goals by way of the second option or Path B.

Under Path B, EFSC must determine that the project complies with the following:

- Applicable Land Conservation and Development Commission rules and land use statutes (including statewide planning goals)
- Any applicable, substantive criteria from each county's local comprehensive plan and land-use regulations.

Both the statewide planning goals and the substantive criteria of county plans and ordinances are discussed below. Issuance of a site certificate would require each of the five Oregon counties to issue applicable conditional-use permits subject to the conditions set forth in the site certificate, and without further review or exercise of discretion by the county.

STATEWIDE LOCAL PLANNING GOALS

ORS Chapter 197 directs Oregon counties to develop county comprehensive plans consistent with the applicable statewide planning goals developed by the Land Conservation and Development Commission. Each comprehensive plan is accompanied by a set of implementing measures. The two most common measures are zoning and land-division ordinances. Every city and county in Oregon has adopted such land-use controls. In addition, a system of statewide zoning was developed to help guide local counties and municipalities in developing land-use plans and ordinances. Nineteen statewide planning goals were defined, including three that are particularly relevant to transmission line location and are applicable in all five Oregon counties in which the B2H Project would be located.

Goal 3—Agricultural Lands

Goal 3 is designed to preserve and maintain agricultural lands for farm use. To comply with this goal, an applicant for a site certificate from EFSC must demonstrate compliance with applicable statutes (ORS 215.283 and 215.275) and Land Conservation and Development Commission rules (OAR Chapter 660, Division 33) relating to exclusive farm use (EFU) lands. ORS 215.283 authorizes certain non-farm uses, including transmission lines, on EFU land provided the facilities are necessary for public service. Under ORS 215.275(1), a utility facility is “necessary for public service” if it must be sited in an EFU zone to provide service. To demonstrate necessity, an applicant must show that reasonable alternatives have been considered and that the facility must be sited on EFU-zoned land due to one or more of the following factors:

- Technical and engineering feasibility.
- The proposed facility is locationally dependent; a utility facility is locationally dependent if it must cross land in one or more areas zoned for EFU in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands.
- Lack of available urban and non-resource lands.
- Availability of existing rights-of-way.
- Public health and safety.
- Other requirements of state or federal agencies.

Goal 4—Forested Lands

The purpose of Goal 4 is to conserve forest lands. To comply with Goal 4, IPC must demonstrate compliance with Land Conservation and Development Commissions applicable rules set forth in OAR Chapter 660, Division 6. For transmission lines to be sited on forest lands, the use must meet the following requirements under the rules:

- The proposed use must not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agriculture or forest lands.
- The proposed use must not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire-suppression personnel.
- The proposed use has the least impact on nearby or adjoining forest or agricultural lands.
- The siting ensures that adverse impacts on forest operations and accepted farming practices on the tract will be minimized.
- The amount of forest lands used to site access roads, service corridors, and structures is minimized.
- The risks associated with wildfire are minimized.

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

The purpose of Goal 5 is to protect natural resources and conserve scenic and historic areas and open spaces. The Guidelines identify the following as Goal 5 resources: riparian corridors, wetlands, wildlife habitat, federal WSRs, state scenic waterways, groundwater resources, approved Oregon recreational trails, natural areas, wilderness areas, mineral and aggregate resources, energy sources, and cultural areas. Generally, local governing bodies must inventory Goal 5 resources and identify those resources determined to be significant.

Oregon Department of State Lands

The Oregon Department of State Lands (Oregon DSL) manages nearly 771,000 acres of surface land and 800,000 acres of off-shore land, estuarine tidelands, and submerged and submersible lands of the navigable waterway system. It is responsible for administering the State's removal-fill law, which protects Oregon's waterways and wetlands from uncontrolled alteration. Its other responsibilities include leasing state-owned mineral rights for the exploration and production of oil, gas, hard minerals and geothermal energy; providing opportunities to lease or buy state land; maintaining historical records related to early land transactions, including deeds, leases, and plats; performing administrative functions for the Natural Heritage Advisory Council; managing oversight and the performance of administrative services for the South Slough National Estuarine Reserve; being the lead state agency for the protection and maintenance of Oregon's unique wetlands resources; and managing coastal resources seaward of the mean high-tide line. Proceeds from the management of lands and waterways and other activities of (Oregon DSL) become part of the Common School Fund principal.

(Oregon DSL) are crossed by the Proposed Action and alternatives in Baker and Malheur counties. No other alternatives cross Oregon state lands.

State of Idaho

Idaho Local Land-Use Planning Act

Idaho Code Title 67-65, Local Land Use Planning, requires all city and county governments to establish local planning procedures and land-use regulations. The Local Land Use Planning Act of 1975 requires every city and county to enact a comprehensive plan, zoning ordinance, subdivision ordinance, area of city impact ordinances, and regulations for confined animal feeding operations (counties only). The act also grants cities and counties the authority to adopt certain laws and policies at the discretion of the governing board. Local authorities have siting authority for transmission lines and substations (see the discussion for Owyhee County below).

Idaho Department of Lands

The State of Idaho owns and manages more than 2 million acres of endowment lands that provide financial support to public schools and other institutions. The Idaho Department of Lands (IDL) manages these trust lands under the governance of the Idaho Board of Land Commissioners, which consists of Idaho's governor, secretary of state, attorney general, superintendent of public instruction, and state controller. The land board acts in the capacity of trustees on behalf of the beneficiary schools and other institutions to manage the state's endowment lands.

All endowment assets of the State of Idaho, per the state constitution, must be managed in such manner as will secure the maximum long-term financial return to the trust beneficiaries. The State Trust Lands Asset Management Plan (Idaho State Board of Land Commissioners 2011) identifies utility and roadway rights-of-way as valid uses of endowment lands. However, any lease would need to be negotiated with the land board. Approximately 2.8 miles of the Proposed Action in Owyhee County is sited on land managed by the IDL.

OREGON COUNTIES

Each Oregon County, in the B2H Project area, has a comprehensive plan and development code that governs land-use development. These include the following:

- *Morrow County Comprehensive Plan* (Morrow County 1986) and *Morrow County Zoning Ordinance* (Morrow County 1980)
- *Umatilla County Comprehensive Plan* (Umatilla County 1983) and Umatilla County Development Code (Umatilla County 2011)
- *Union County Land Use Plan* (Union County 1979) and *Union County Zoning, Partition and Subdivision Ordinance* (Union County 1983)
- *Baker County Zoning and Subdivision Ordinance #83-3* (Baker County 1984) and Land Use Ordinances of 1983 (Baker County 2010)
- *Malheur County Comprehensive Plan* (Malheur County 1982) and Malheur County Zoning Ordinance (Malheur County 2008)

Where a project is not under the jurisdiction of EFSC or the project applicant elects to seek local approval outside of the EFSC process (Path A), each Oregon County would consider issuing a conditional-use permit after independent permit review. As described previously, IPC has elected to follow Path B, which means that issuance of a site certificate would bind state and local jurisdictions to the EFSC's action and would require them to issue permits, licenses, and certificates for the construction and operations of the facility. To issue a site certificate, EFSC must conclude that the proposed facility will comply with the substantive criteria identified in the county plans and ordinances.

In response to the EFSC Notice of Intent 2008 and 2010 comment processes, four of the five Oregon counties identified substantive criteria they consider applicable to the proposed B2H Project:

- Morrow County letter to the ODOE dated December 8, 2008
- Umatilla County letter to the ODOE dated September 15, 2010
- Union County letter to the ODOE dated October, 2008
- Baker County letter to the ODOE dated September 22, 2010

Malheur County has not identified specific substantive criteria. Nevertheless, Section 6-3A-2 of the Malheur County Zoning Ordinance (2008) states that utility facilities necessary for public use may be permitted outright in EFU, exclusive range use, and exclusive farm-forest use zones.

While each county has specific concerns, common general plan themes include, but are not limited to, the following:

- Protection of EFU, grazing/farmland, and timber-grazing zones
- Establishment of setbacks from streams
- Protection of Goal 5 resources (natural resources, scenic and historic areas, and open spaces)
- Prevention of flood damage by implementing flood hazard zones
- Avoiding clearing in riparian areas
- Development compatibility with historic, archaeological, and cultural sites
- Protection of sensitive habitat wetland and big-game habitat
- Prevention of the spread of noxious weeds

OWYHEE COUNTY, IDAHO

The *Owyhee County Comprehensive Plan* (Owyhee County 2010a) was adopted in 2002 and amended in 2010. The County plan has an objective to encourage public utilities and utility corridors to be located on public lands. An energy goal in the Owyhee County Comprehensive Plan is to protect the property rights of Owyhee County citizens and not allow the infiltration of public utilities and energy corridors to negatively impact those citizens or their private property. Owyhee County adopted an Energy Plan (Owyhee County 2007) in 2007. The Energy Plan includes a policy to encourage the improvement of the power delivery system.

The *Owyhee County Zoning Ordinance* (Owyhee County 2010b) was adopted in 2010. Power generation, production and/or distribution facilities are permitted as conditional uses in the Agriculture (A), Multi-use (M), Residential (R), Commercial (C), and Industrial (I) zones.

OTHER PLANS AND RULES

TIMBER MANAGEMENT

Timber management includes the commercial and non-commercial harvest of forest wood products. Harvestable trees from conifer forests are generally referred to as timber. Besides lumber, timber products also include poles, posts, firewood and Christmas trees and are often included in timber or forest management programs. Additional discussion of forest vegetation communities is presented in Section 3.2.3 Vegetation.

All timber cleared from the right-of-way on National Forest System (NFS) land would be cut and cleared in accordance with standards and guidelines in the Wallowa-Whitman LRMP. Merchantable timber cut on NFS land would be disposed of as described in 36 CFR 223.12 or as required by the USFS. Clearing on BLM-managed forest land would meet requirements of the applicable RMP. Forested areas outside the right-of-way that are disturbed by the project (such as by temporary roads and fly yards) would be replanted according to federal (e.g., BLM and USFS) and state requirements (e.g., Oregon Reforestation Rules, OAR 629-610-0000 through 629-610-0090).

Prime Farmland

Federal legislative acts addressing the management and protection of prime farmland include the Farmland Protection Policy Act of 1984; Executive Order 11752 (1973); Executive Order 11988 (1973); Secretary of Agriculture Memorandum 1827; and Departmental Regulation 9500-003 (USDA 1983) for prime farmland.

Fire Management

The proposed B2H Project area often experiences fire ignitions that quickly escalate to large fires due to fuel types, including annual grasses and brush, combined with high summer temperatures and low relative humidity. The fire season typically starts in May and ends in mid-October. Fires occur as early as March and as late as December depending on weather and ignition activities (lightning, vehicles, sparks from railroads, fireworks, debris burning, arson, etc.). Another common fire cause is downed power lines during wind events (BLM 2005).

Areas have been designated for initial fire-suppression responsibility to eliminate confusion about who is in charge during a fire emergency. Primarily, initial suppression authority falls to either a federal (USFS or BLM) or state department, and, less commonly, fire protective associations have this responsibility. Fire protective associations are set up by groups of landowners to provide wildland fire protection. These agencies work across land ownership boundaries. Individual land-management agencies or landowners have the responsibility for managing lands to reduce fire hazards and provide fire-suppression access prior to a fire.

None of the analysis area is currently designated as a wildland fire use area, where wildland fires might be allowed to burn if resource management objectives would be advanced by the fire. Prescribed fire may be used throughout public lands to meet resource management objectives, particularly vegetation management.

The USFS LRMP and BLM RMPs establish how fire will be managed on federal lands. The following standards, guidelines and management direction apply to lands within the analysis area.

Wallowa-Whitman National Forest Land and Resource Management Plan

Wildfire Control Priorities—Give the highest priority for aggressive suppression action to wildfires that threaten life, private property, public safety, improvements, or investments.

BLM Vale District Fire Management Plan

Management Direction—The Vale District Fire Management Plan (FMP) (BLM 2004) details fire management strategies and operations for the BLM's Vale District and the Southeastern Oregon Fire Planning Unit (FPU). The Vale BLM is the lead agency for the Southeastern Oregon FPU, which includes lands administered by the Wallowa-Whitman National Forest for which the Vale District, through interagency agreement, has fire-suppression responsibility. The FMP is tiered to approved USFS LRMPs.

Southeastern Oregon Resource Management Plan

Management direction in the RMP is to provide appropriate management response on all wildfires. Response is to be based on pre-planned fire criteria, resource objectives, and constraints as identified in Appendix M of the approved district FMP. As necessary, the existing FMP should be modified to reflect changes in resource objectives and constraints (BLM 2002:37).

Baker Resource Management Plan

RMP management direction is to implement full suppression on fires that threaten high values at risk, such as private property, improvements, and areas with unique and/or special resource values. In addition, implement modified suppression, through escaped fire analysis, on areas with lower values at risk and that are not covered by prescribed fire plans. (BLM 1989).

Owyhee Resource Management Plan

RMP direction is to, "Suppress wildfires by taking the appropriate management response using the range of acceptable acreage limits listed for each fire management zone within the resource area. The appropriate response should consider resource values, firefighter safety, and costs and allow natural fires to burn to meet resource objectives" (BLM 1999). The current FMP is reviewed periodically and may be revised in conformance with the RMP objectives.

Owyhee Reservoir Resource Management Plan

The Reclamation is not directly responsible for fire suppression on the Owyhee Reservoir lands it administers. The RMP adopts fire-suppression policies established by the BLM for surrounding lands. The RMP also includes measures to limit fire risk.

Fire Management Plan, Southwestern Idaho Fire Planning Unit

The FMP (BLM 2011d) incorporated the management direction from the Owyhee RMP. It does not provide additional direction. It does divide the area into fire management units, sets protocols for all and individual units, and identifies suppression priorities and fuel treatment priorities.

3.2.6.3 Issues Identified for Analysis—Land Use and Agriculture

Issues related to land use and agriculture were raised by the public, American Indian tribes and federal and state agencies during scoping. The list below is a summary of the issues identified during scoping that are analyzed in this EIS, as well as issues that must be considered as required by applicable laws or regulations.

Land Use

- What forest plan and RMP amendments would be needed?

- Could the transmission line be constructed only on public lands rather than private lands?
- How much land area will be required for the project?
- Will the project be located in existing utility corridors?
- What kinds of effects would occur on Native American reservations?
- Will increased access to the project area result in damage to land and resources?
- What effects will the project have on conservation and special-designation lands like areas of critical environmental concern or suitable wild and scenic rivers?
- Is the project consistent with local county land use plans?
- What would be the effects on the wilderness character of wilderness areas, WSAs, and lands with wilderness characteristics?

Agriculture

- Will there be negative economic effects on agricultural and ranching operations?
- How much Exclusive Farm Use land would be affected?
- Would there be changes to irrigation water use?
- What would be the effects of spraying herbicides have on agricultural crops?
- Do transmission lines pose a danger for agricultural workers?

3.2.6.4 Methodology—Land Use and Agriculture

The analyses completed for this assessment were conducted using readily available geographic information system (GIS) data in conjunction with GIS datasets representing the Proposed Action and alternative centerlines and indicative project design features such as access roads and staging areas. Indicative features have been preliminarily sized and located based on GIS analysis and would be revised and/or relocated based on detailed site study during project design and engineering.

The analysis area for identifying land uses, special designations, special management areas, ownership patterns, agriculture, and other land uses extends 0.5 miles on either side of the Proposed Action and alternative centerlines, and 50 feet on each side of all existing and new access roads. For the 250 foot right of way, the analysis area covers approximately 30 acres per mile. The analysis area also includes sites for substations, communication sites, multi-use areas, and fly yards.

No designated wilderness areas or WSAs are within 0.5 miles of the centerline for the Proposed Action and alternatives. Lands with wilderness characteristics were identified within the 250-feet of the centerline for the Proposed Action and alternatives.

3.2.6.5 Affected Environment—Land Use and Agriculture

This section describes the affected environment of the Proposed Action and alternatives in terms of land ownership, zoning, designated corridors and existing rights-of-way, land-use, timber and fire-management activities, Indian reservations, prime farmland, livestock grazing, crop production, and crop spraying.

Land uses in the area where the B2H Project would be located generally consist of open spaces and agricultural uses with an occasional town, city, or other urbanized or developed area. Special uses include areas of historic significance, recreation areas, areas of critical environmental concern (ACECs), lands with wilderness characteristics, and wildlife management areas (WMAs). Figure 3-32 is a generalized land status map of the region.

Several aspects of land use are common to the entire B2H Project area. Others vary by segment. This section begins with descriptions of land uses that are common throughout the project area and then presents information on land uses and agriculture by segment.

AFFECTED ENVIRONMENT COMMON TO ALL ALTERNATIVES

LAND USE

Land Ownership and Management

During scoping, the public expressed strong opinions on whether it is preferable to place transmission lines on private or public lands. It is often difficult to decide whether impacts are more suitable on private or public lands. Private lands are owned by individuals or groups and therefore fewer people receive the benefits (structure payments or right-of-way compensation) or consequences (inconvenience, damage, etc.) of a transmission line project. Alternatives with more private land affect a higher number of people because parcel sizes tend to be smaller than on alternatives with more publicly managed lands. The effects are at a more personal and direct level. Some private landowners find right-of-way compensation adequate and request the placement of transmission line facilities on their property, while other private owners may not want project structures on or near their property, or may feel they have not been fairly compensated for the loss of the use of their land and the inconveniences created.

Public lands are managed for all citizens under various laws and plans. Therefore, everyone gets the benefit and the consequences of a project. Public lands provide natural resources that could be affected by the location of the transmission line (such as wildlife and habitat; and visual, cultural, and historical resources). Both the USFS and BLM derive their authority to locate transmission lines on public land under the FLPMA. This act explicitly permits the issuance of right-of-way under Title V. Decisions on issuing a right-of-way grant or a special-use permit must also consider national and state land-use policies, environmental quality, economic efficiency, national security, safety, and good engineering and technological practices.

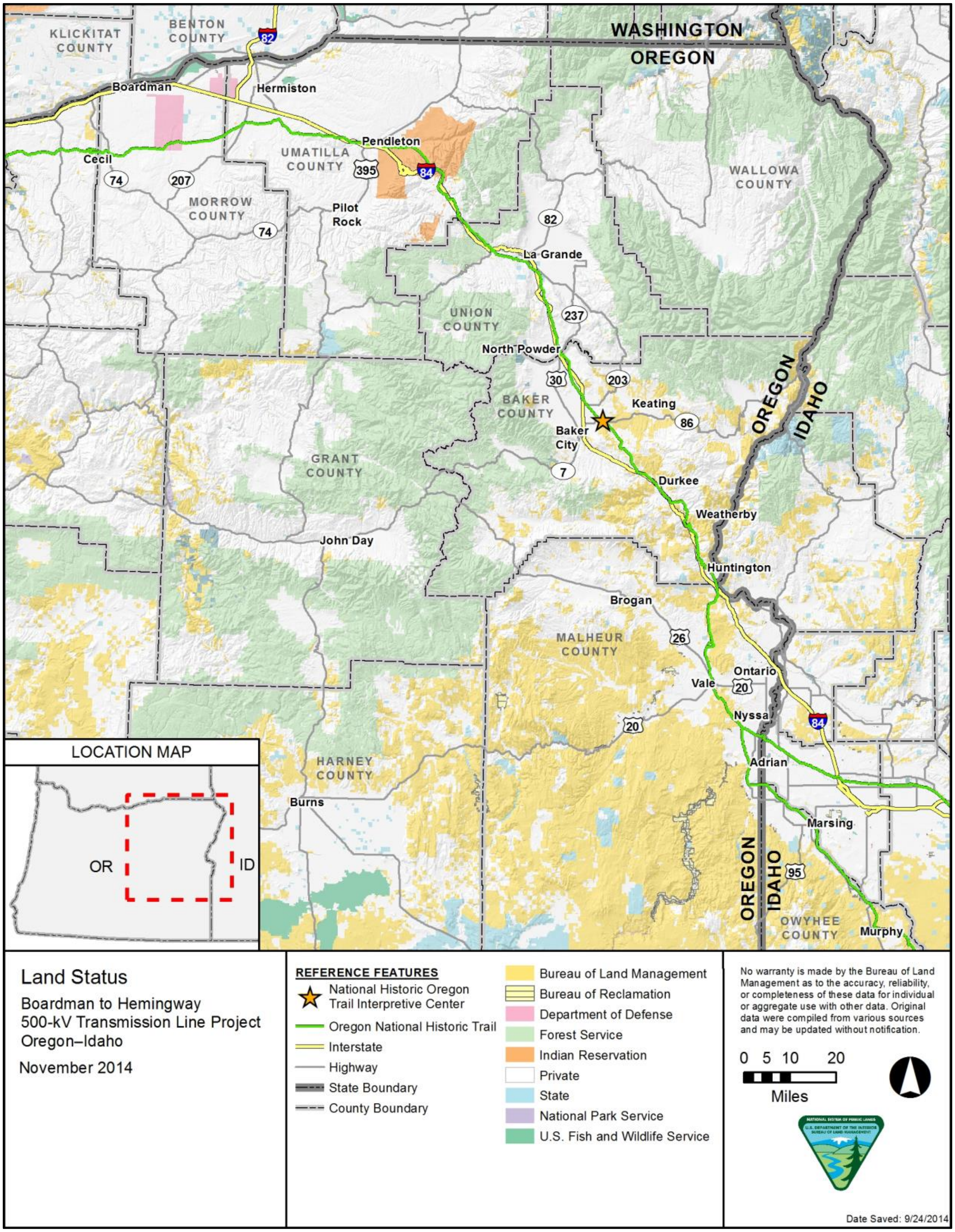


Figure 3-32. Land Status

An alternative to the Proposed Action that would be located primarily on public lands was considered but not analyzed in detail for reasons described in Chapter 2. The 250-foot right-of-way covers approximately 30 acres per mile. The acres of construction disturbance for the Proposed Action are shown by property ownership in Table 3-101. The acres of operations disturbance for the Proposed Action are shown by property ownership in Table 3-106. Acres of disturbance for the alternatives are also presented in the Environmental Consequences section.

Wilderness and Wilderness Study Areas

There are no wilderness areas or WSAs that are within the analysis area or that would be affected by the Proposed Action or any of the alternatives. Thus, no effects on wilderness areas or WSAs would be anticipated from implementation of the B2H Project.

Wild and Scenic Rivers

In 1968, Congress established a national policy to protect undeveloped rivers and streams, through the Wild and Scenic Rivers Act (P.L. 90-542) and the creation of the National WSRs System. Selected rivers in the United States are preserved for possessing outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Rivers, or sections of rivers, so designated are preserved in their free-flowing condition and are not dammed or otherwise impeded. BLM RMPs and USFS LRMPs identify segments of rivers as suitable for Congressional designation as a Wild and Scenic River under criteria set forth in the Wild and Scenic Rivers Act.

Wild and scenic rivers are assigned one or more classifications: wild, scenic, or recreational. These classifications are based on the developmental character of the river on the date of designation. Wild rivers are the most remote and undeveloped while recreational rivers often have many access points, roads, railroads, and bridges. Wild and scenic rivers receive the same standard of protection regardless of classification.

Within the Oregon section of the project area the Owyhee River Below the Dam river segment (13.5 miles, 3973 acres) is a national wild and scenic suitable river with a recreational classification. The outstanding remarkable values are scenic, recreation, wildlife and botanic. However, it has not been formally designated by Congress.

There are no designated wild and scenic rivers in the B2H Project analysis area managed under the BLM's Baker RMP, SEORMP or Owyhee RMP that would affected by the B2H Project. In addition, there are no designated national wild and scenic rivers within the Wallowa-Whitman LRMP managed lands that would be affected by the B2H Project.

Areas of Critical Environmental Concern

The BLM and USFS designate ACECs where special management attention is needed to protect, and prevent irreparable damage to, important historical, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes to protect human life and safety from natural hazards (BLM 1988). There are no designated ACECs within the B2H Project analysis area in the USFS Wallowa-Whitman LRMP management area. There are likewise no ACEC's in B2H Project analysis area within the BLM's Owyhee RMP management area.

The following ACEC's are within the analysis area for the Proposed Action and/or the alternatives:

- Baker RMP – Three Oregon Trail ACEC parcels (Powell Creek, Straw Ranch 1 and Flagstaff Hill) The relevant values for these parcels are historic resource and visual qualities.
- Southeastern Oregon RMP - Three ACECs; Oregon Trail – Birch Creek ACEC, Oregon Trail – Tub Mountain ACEC, of which the relevant values are historic and cultural as part of the original Oregon Trail, scenic and special status plants; and the Owyhee River Below the Dam ACEC, the relevant values are scenic, special status plants and wildlife, prime wildlife habitat values with black cottonwood gallery on riverine system.

Land Use Types

The principal land use within the B2H Project analysis area is shrub/grass open range, with cultivated agriculture and forestland a distant second and third, respectively. Relatively small portions of the proposed B2H Project analysis area cross barren lands (including disturbed and extractive mining areas), developed areas (including commercial, residential, and existing right-of-way), woodlands or wetlands, and open water. Table 3-91 shows the percentage of the B2H Project analysis area in eight different land use types by county.

Table 3-91. Existing Land Use Types in the Analysis Area by County (percent)

County	Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub/ Grassland	Wetland	Woodland
Morrow (Oregon)	71.07	0.00	1.33	0.00	0.23	27.50	0.20	0.03
Umatilla (Oregon)	32.45	0.01	0.81	14.84	0.18	46.89	1.54	3.29
Union (Oregon)	1.76	0.40	0.96	36.15	0.26	43.82	3.95	12.70
Baker (Oregon)	3.71	0.62	1.20	8.82	0.31	79.14	2.00	4.20
Malheur (Oregon)	3.46	0.88	0.47	0.00	0.51	94.19	0.44	0.04
Owyhee (Idaho)	2.49	0.26	1.17	0.00	0.05	95.57	0.40	0.05
Total Analysis Area	14.49	0.53	0.91	8.16	0.34	71.23	1.37	3.02

Table Note: ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories (see GIS documentation).

Water and wetlands are discussed in Section 3.2.2. Forestland is discussed below relative to effects on timber management, although much more detail on the composition and extent of the forests found in the analysis area appears in the Vegetation Section 3.2.3. Developed land, including residential, commercial, and industrial development, occupies 0.91 percent of the analysis area.

Zoning

In Oregon, 79 percent of land in the analysis area is zoned for agriculture, whereas 15 percent is zoned for forestry. In Idaho, nearly 100 percent of land in the analysis area is zoned for agriculture. Greater detail for county zoning is shown in Table 3-92.

Table 3-92. Percentage of Analysis Area by County-Level Zoning Category

County	County Zoning Class	Percent [1]
Morrow (Oregon)	Exclusive Farm Use	98.62
	General Industrial	0.01
	Port Industrial	1.33
	Public	0.00
	Resource Related Industrial	0.05
Umatilla (Oregon)	Exclusive Farm Use	79.47
	Exclusive Farm Use - 20 Acre	0.02
	Exclusive Farm Use/Critical Winter Range Overlay	3.26
	Grazing Farm Zone	12.23
	Grazing Farm Zone/Critical Winter Range Overlay	4.87
	Light Industrial	0.12
	Rural Tourist Commercial	0.03
Union (Oregon)	Agriculture-Grazing A-2	21.73
	Exclusive Farm Use A-1	5.63
	Timber-Grazing Use A-4	72.65
Baker (Oregon)	EFU/Mineral Extraction Zone	0.21
	Exclusive Farm Use	87.04
	General Commercial/Exclusive Farm Use	0.01
	Industrial Zone/Exclusive Farm Use	0.61
	Limited Use Combining Zone/Exclusive Farm Use	0.03
	Primary Forest Zone	10.05
	Primary Forest/Mineral Extraction Zone	0.06
	Rural Residential 5/Exclusive Farm Use	0.00
	Rural Service Area/Exclusive Farm Use	0.04
	Timber Grazing Zone	1.83
	Timber Grazing/Exclusive Farm Use	0.05
	Timber Grazing/Primary Forest Zone	0.06
Malheur (Oregon)	Agriculture	99.91
	Rural Industrial	0.02
	Rural Service Center	0.07
Owyhee (Idaho)	Agricultural	99.88
	Multi-Use	0.12

Table Note: [1] Percentages based on 2011 Morrow County zoning data, 2012 Umatilla County zoning data, 2009 Union County and Baker County zoning data, and 2009 Owyhee County zoning data. Percentages for Malheur County based on statewide zoning data from Oregon Geospatial Data Gateway.

Exclusive Farm Use (EFU) zoning is established by Oregon counties pursuant to Statewide Planning Goal #3 – Agricultural Lands as described in section 3.2.6.2 Regulatory Framework, above. As described in that section, the level of conformance of the Proposed Action and alternatives with local zoning, including EFU, would be determined by the Oregon Energy Facility Siting Council as part of the Oregon State permitting process.

AGRICULTURE

Table 3-93 shows the percentage of analysis area by agricultural type by county. Dryland farming is non-irrigated crops, such as wheat, alfalfa, and hay. Irrigated farming uses mechanical means to periodically distribute water for crop production, such as potatoes, beans, peas, fruit, and corn, along with many other vegetable and seed crops (NASS 2010). Pasture lands are used for grazing livestock.

Table 3-93. Percentage of the Analysis Area in Agriculture Types by County

County	Conservation Reserve Program	Dryland Farming	Irrigated Agriculture	Pasture/Hay
Morrow (Oregon)	3.76	51.23	44.98	0.02
Umatilla (Oregon)	0.88	40.08	53.79	5.25
Union (Oregon)	0.00	22.01	71.80	6.20
Baker (Oregon)	0.00	6.88	82.69	10.43
Malheur (Oregon)	0.00	61.72	22.95	15.33
Owyhee (Idaho)	0.00	9.14	86.67	4.18
Total Analysis Area	2.47	45.32	48.96	3.26

Table Note: ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories, then further classified into agriculture types (see GIS documentation).

Crop Production and Irrigation

Agricultural lands are used to grow a variety of crops in the analysis area. There is more dryland farming in the analysis area than irrigated lands. Irrigation in the analysis area includes both center-pivot and wheel-line sprinkler irrigation methods. Most of the irrigated farmland in the analysis area is found in Morrow and Umatilla counties. Center-pivot sprinkler irrigation system arms range from 200 to over 2,000 feet long. The typical length of those within the analysis area is 1,320 feet, which covers approximately 125 acres. Wheel-line methods (side roll or power roll) include a straight line of wheeled irrigation pipe that moves from one end of a field to the other. The standard wheel line is 1,320 feet long.

Conservation Reserve Program

The Conservation Reserve Program (CRP) was established by the U.S. Department of Agriculture (USDA) to protect topsoil, reduce water runoff and sedimentation, protect groundwater, and improve the conditions of surface water. The program is voluntary. CRP acres are managed under 10- to 15-year contracts that can be renewed. CRP landowners receive payments for rental, incentives, and/or cost-share. The CRP is reauthorized periodically. The last reauthorization was the Food, Conservation, and Energy Act of 2008.

Properties under state or federal CRPs or Grassland Reserve Programs occur within the B2H Project analysis area, although information on how many properties are present is unavailable to the public. If necessary, IPC could conduct negotiations with individual landowners to withdraw the transmission line easement from the reserve program and the landowner compensated for the withdrawal.

Prime Farmland

As defined in the U.S. Farm Protection Act (7 U.S.C. 4201), prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion as determined by the U.S. Secretary of Agriculture. Prime farmland also includes land with the above characteristics but that is being used to produce livestock and timber. It does not include land already in, or committed to, urban development or water storage. Farmland of Statewide Importance is land in addition to prime farmland that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops as determined by the appropriate state agencies. These lands are almost prime farmlands and produce high yields of crops when managed with customary farming methods as indicated by the Natural Resources Conservation Service (NRCS). Table 3-94 shows the percent of the analysis area that is occupied by farmland of statewide importance and prime farmland.

Prime farmland does not necessarily need to be irrigated to produce food, feed, etc. Within the analysis area, prime farmlands are either irrigated or irrigated and drained. Drained means the area can be considered prime farmland when and if water drains off well.

Table 3-94. Percentage of Prime Farmland in the Analysis Area by County

County	Farmland of Statewide Importance	Prime Farmland if Irrigated	Prime Farmland if Irrigated and Drained
Morrow	36.90	40.45	0.00
Umatilla	50.39	29.60	0.00
Union	51.69	7.28	2.20
Baker	54.01	5.41	0.51
Malheur	1.68	1.22	0.00
Owyhee	0.00	2.45	0.22

Table Note: Soil Survey Geographic (SSURGO) database soil data with farmland classifications supplemented with Wallowa-Whitman National Forest SRI survey with assumed farmland classifications based on adjacent surveys.

Livestock Grazing

Rangeland and pasture is used for feeding grazing animals during certain times of the year. Sometimes pastures are irrigated to increase the feed production and quality. Approximately 5,000 acres of grazing lands are located within the Proposed Action right-of-way.

Grazing allotments cover large areas of BLM- and USFS-administered lands within the project area. Grazing allotments are designated primarily for grazing cattle and sheep. The BLM objective for grazing lands is to ensure the long-term health and productivity of these lands, and to create multiple environmental benefits that result in healthy watersheds. Livestock grazing is managed in accordance with Rangeland Health Standards. The productivity of grazing lands is measured in animal unit months (AUMs), the amount of forage needed by a cow and a calf for one month. An AUM is generally 10 to 20 acres, depending on forage quality. The number of authorized AUMs on BLM and USFS-administered lands can vary depending on factors such as drought, wildfire, and market conditions, Additional information on BLM grazing management can be found in the *Fact Sheet on the Bureau of Land Management's Management of Livestock Grazing* at http://www.blm.gov/wo/st/en/prog/grazing.html.

Both the USFS and BLM provide for livestock grazing on active allotments in the project area. Table 3-95 shows the acres of federal grazing allotments and AUMs in the one mile wide analysis area. Approximately 2,000 acres of federal grazing allotments are located within the 500 foot right-of-way, and would be affected during construction of the Proposed Action.

Table 3-95. Federal Grazing Allotments Within the Analysis Area

Managing Agency and Land Use Plan	Number of Allotments	Animal Unit Months	Total Acres
Wallowa-Whitman National Forest LRMP	9	10,747	128,640
BLM Baker RMP	81	14,978	301,655
BLM Southeastern Oregon RMP	29	40,170	420,641
BLM Owyhee RMP	9	18,273	120,991

States also lease land for grazing and have similar systems in place for the proper management of grazing leases. Grazing also is a major land use activity on private land.

Aerial Spraying

The aerial application of pesticide (crop dusting) is common in the B2H Project area. A field can receive multiple applications per year depending on the type of crop and preferences of individual operators (Table 3-96). Aerial spraying involves dry application (usually fertilizer) and liquid applications of fungicides and pesticides.

Fixed-wing aircraft typically carry 3,000 pounds of dry fertilizer or 500 gallons of liquid mixtures. Helicopter loads vary considerably depending on the type of craft. Effective ranges for spray aircraft are normally 25 to 30 miles. Operators will sometimes use landing strips other than their own to maintain some degree of efficiency. Nearly all of the spraying is done during daylight hours in the project area.

Landing strips currently exist at several locations in the area, and the aerial applicators are concerned about new transmission lines affecting their operations. Landing strips used by aerial applicators need to have ample clearance at each end of the runways due to the heavy loads carried by the aircraft. Due to the reliance that crop producers place on them, aerial applicators are vital to the local economy.

Table 3-96. Aerial Applications per Year by Crop

Type of Crop	Number of Applications per Year
Irrigated wheat	1 to 2
Irrigated alfalfa	1 to 2
Irrigated potatoes	5 to 7
Irrigated onions	2
Irrigated dry beans	1 to 2
Irrigated canola	1
Irrigated green peas	2
Nonirrigated wheat	1
Nonirrigated summer fallow	1

Timber

The proposed B2H Project would affect timberlands on federally managed and privately owned lands. Table 3-97 shows the percentage of the analysis area that is forested land by owner or management agency. Effects to tree farms in Morrow County are addressed in the project segment discussion.

Table 3-97. Percentage of Analysis Area that is Forested Land by Ownership

County	BLM	Private	State	USFS
Morrow	0.00	0.00	0.00	0.00
Umatilla	0.00	1.40	0.00	0.00
Union	0.01	3.10	0.01	1.04
Baker	0.01	0.43	0.00	2.15
Malheur	0.00	0.00	0.00	0.00
Owyhee	0.00	0.00	0.00	0.00
Total Analysis Area	0.02	4.93	0.01	3.19

Table Note: ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories (see GIS documentation). Table only shows forest category.

The analysis area contains portions of Wallowa-Whitman LRMP management areas managed for timber production and other resources. Table 3-98 shows the percentage of the analysis area of each county that is in Wallowa-Whitman National Forest timber management areas.

Table 3-98. Percentage of Analysis Area in Wallowa-Whitman National Forest Plan Timber Management Areas

County	Area 1 Timber Production Emphasis	Area 1W Timber Management Winter Range	Area 3 Wildlife/Timber: Big Game Winter Range	Area 15 Old-Growth Preservation	Area 16 Admin and Rec Site Retention: Forshey Orchard	Area 17 Power Transportation Facility Retention
Morrow	NA	NA	NA	NA	NA	NA
Umatilla	0.00	0.00	0.00	0.00	0.00	0.00
Union	0.73	0.00	4.70	0.00	0.00	3.36
Baker	4.15	0.96	2.43	0.09	0.01	0.00
Malheur	NA	NA	NA	NA	NA	NA
Owyhee	NA	NA	NA	NA	NA	NA
Total Analysis Area	1.30	0.28	1.25	0.03	0.00	0.39

Table Note: ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories (see GIS documentation). Table only shows forest category. NA = Not applicable (No Wallowa-Whitman USFS lands within these counties.)

AFFECTED ENVIRONMENT BY SEGMENT

SEGMENT 1—MORROW UMATILLA

Land Use

The great majority of the land in the Proposed Action and alternatives analysis area in Segment 1 is privately owned. The principal land uses in the Segment 1 analysis areas for the Proposed Action and the alternatives are agriculture (approximately 52 percent) and shrub/grass open range (approximately 37 percent), with forest and woodlands at approximately 5 percent of the analysis area. County zoning of the analysis area in Segment 1 is nearly 99 percent zoned for agricultural uses, with nearly 90 percent of the land area zoned for Exclusive Farm Use.

The Proposed Action and alternatives in Segment 1 would cross lands in the vicinity of the Naval Weapons System Training Facility (NWSTF) Boardman. NWSTF Boardman is managed under a Memorandum of Agreement, which is subject to a series of avigation easements that place restrictions on the use of land within the easement. Avigation easements on property to the west and east of the NWSTF Boardman constrain structure heights to no more than 35 feet above ground level into the regulated air space. The areas of restricted airspace in the vicinity of NWSTF Boardman are shown in Figure 3-33.

Among the Proposed Action and the alternatives in the vicinity of NWSTF Boardman, the least problematic for the Department of the Navy is the Proposed Action. In a letter from the commanding officer of the Naval Air Station Whidbey Island dated April 23, 2013, the commanding officer expresses continuing concerns with new transmission line construction in the vicinity of NWSTF Boardman, but offers a hierarchy of preferences based on minimizing adverse operational impacts.

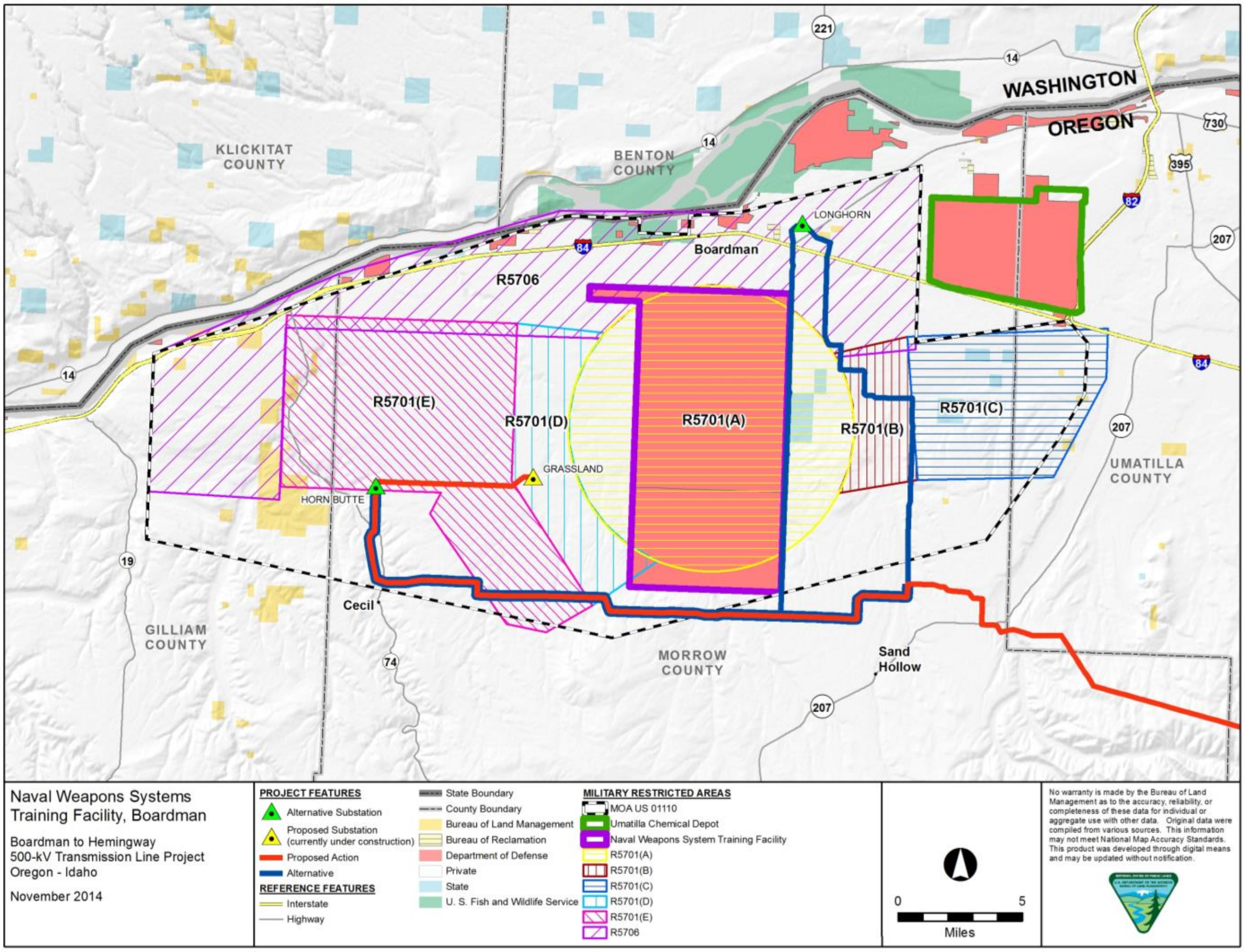


Figure 3-33. Naval Weapons System Training Facility, Boardman

Agriculture

Included in the agricultural use category are dryland agriculture (approximately 46 percent of agricultural lands) irrigated agriculture (approximately 50 percent of agricultural lands) and pasture (approximately 4 percent of agricultural lands). Thirty nine percent of the analysis area in Segment 1 is Prime Farmland. Tree farms are a type of irrigated agriculture that is not present in any of the other B2H Project segments. Tree farming is unique in that farming of the hybrid poplars in Morrow County would not be feasible within the right-of-way of the B2H Project due to height limitations on vegetation in the right-of-way. In addition, two dairies are present in the analysis area in Morrow County.

Segment 2—Blue Mountains

Land Use

Approximately 83 percent of the land in the analysis area in Segment 2 is private. Approximately 15 percent of the land in the analysis area is within the Wallowa-Whitman National Forest, with the remaining approximately 2 percent managed by the BLM.

The principal land uses in the Segment 2 analysis area are forest and woodlands (approximately 49 percent) and shrub/grass open range (approximately 44 percent), with agriculture at approximately 2 percent of the analysis area. County zoning of the Segment 2 analysis area is nearly 100% agricultural. Timber harvesting and management are important land uses in Segment 2.

Agriculture

Of the agricultural lands in Segment 2, approximately 72 percent are irrigated, 22 percent are dry farmed and approximately 6 percent are in pasture. Although the overall use of lands in the Segment 2 analysis area for agriculture is relatively small, 61 percent of the analysis area is designated Prime Farmland. BLM and USFS grazing allotments comprise approximately 13 percent of the analysis area in Segment 2.

Segment 3—Baker Valley

Land Use

Approximately 72 percent of lands in the Proposed Action analysis area in Segment 3 are private. Approximately 24 percent are managed by the BLM and 4 percent are owned by the State of Oregon.

The principal land uses in the Segment 3 analysis area are open shrublands and grasslands (approximately 70 percent) and forest and woodlands (approximately 13 percent), with agriculture at approximately 2 percent of the analysis area. County zoning of the Segment 3 analysis area is approximately 87 percent EFU and approximately 13 percent forest and timber/grazing zones. Timber harvesting and management are important land uses in Segment 3.

Agriculture

Of the agricultural lands in Segment 3, approximately 72 percent are irrigated, 22 percent are dry farmed and approximately 6 percent are in pasture. Although the overall use of lands in the Segment 3 analysis area for irrigated agriculture is relatively small, approximately 60 percent of the Segment 3 analysis area is designated Prime Farmland. BLM and USFS grazing allotments comprise approximately 28 percent of the analysis area in Segment 3.

Segment 4—Brogan Area

Land Use

Approximately 50 percent of lands in the Proposed Action analysis area in Segment 4 are private. Approximately 47 percent are managed by the BLM and 3 percent are owned by the State of Oregon.

The principal land uses in the Segment 4 analysis area are open shrublands and grasslands (approximately 80 percent) and forest and woodlands (approximately 4 percent), with agriculture at approximately 12 percent of the analysis area. County zoning of the Segment 4 analysis area is 99 percent agricultural with approximately 80 percent of the analysis area zoned EFU.

Agriculture

Of the cultivated agricultural lands in Segment 4, approximately 82 percent are irrigated, 7 percent are dry farmed and approximately 11 percent are in pasture. Although the overall use of lands in the Segment 4 analysis area for irrigated agriculture is relatively small, approximately 60 percent of the Segment 4 analysis area is designated Prime Farmland. BLM and USFS grazing allotments comprise approximately 50 percent of the analysis area in Segment 4.

Segment 5–Malheur

Land Use

Approximately 33 percent of lands in the Proposed Action analysis area in Segment 5 are private. Approximately 65 percent are managed by the BLM and 1 percent are owned by Reclamation.

The principal land uses in the Segment 5 analysis area are open shrublands and grasslands (approximately 94 percent) with agriculture at approximately 4 percent of the analysis area. County zoning of the Segment 5 analysis area is 99.9 percent agricultural with none of the analysis area zoned EFU.

Lands with Wilderness Characteristics

In February 2004, a citizen group provided the BLM Vale District with an inventory report containing maps, photos, and photo logs for 42 proposed new wilderness study areas (WSAs) or wilderness areas of critical environmental concern covering over 2.2 million acres of public land in the planning area (ONDA 2004 a, b, c). The group later submitted supplemental sets of digital photos, photo logs, and geographic information systems spatial data with additional or edited versions of their original submission. From 2007-2012 the BLM Vale District conducted wilderness inventory updates for public lands outside of designated WSAs (approximately 1.3 million acres in the planning area), following the current inventory guidance (USDI-BLM 2007a, b, c, d). Interdisciplinary (ID) teams reviewed the existing wilderness inventory information contained in the BLM's wilderness inventory files, previously published inventory findings (USDI-BLM 1980a, and 1980 b), and citizen-provided wilderness information (ONDA 2007a, b, c).

The BLM identified preliminary boundaries for wilderness characteristics inventory units and reviewed existing pertinent information within the unit to determine if data updates or additional field inventory information was needed. Updates and inventories were completed prior to conducting an evaluation of a given unit. Inventory unit boundaries are principally formed by public land boundaries and roads. The interdisciplinary teams made final route and boundary determinations and, subsequently, evaluated wilderness characteristics in each unit. BLM staff compiled the new and existing photography, resource information, ID team discussion records, and route information into individual unit records. With this information, the ID teams then made draft wilderness characteristic determinations and provided these to BLM managers for final concurrence. The lands with wilderness characteristics inventories completed by BLM comply with BLM Manual 6310. Final wilderness characteristics determinations have been made available to the public on the BLM Vale District website at http://www.blm.gov/or/districts/vale/plans/wce/malheur-index.php.

Hard copies of the final wilderness characteristics determinations are contained in the BLM Vale District files and have been made available to interested parties upon request. Pursuant to 40 CFR Section 1502.21, the BLM hereby incorporates, by reference, its wilderness inventory update documentation into this analysis and summarizes below the two units that could be affected. During the upcoming SEORMP plan amendment process, the BLM will determine whether or not to administratively protect lands that have been found to contain wilderness characteristics.

The Double Mountain Unit (OR-034-040) was found to possess wilderness characteristics (see wilderness criteria forms at http://www.blm.gov/districts/vale/plans/files/DoubleMountain_OR-34-040_ALL.pdf). The area meets minimum size and naturalness criteria, as well as provides outstanding opportunities for solitude. The dispersed recreational opportunities are not considered outstanding in quality. Primary primitive recreation opportunities within the unit include hunting of common upland and big game, day hiking, horseback riding, and general sightseeing and photography. Three BLM special status plant species are within the unit: Cronquists' sticksee, Biddle's lupine, and Cusick's chaenactis.

The Sourdough Mountain Unit (OR-034-030) was also found to possess wilderness characteristics (see the wilderness criteria forms at http://www.blm.gov/districts/vale/plans/files/DoubleMountain_OR-34-040_ALL.pdf). The area meets minimum size and naturalness criteria, as well as provides outstanding opportunities for solitude. The dispersed recreational opportunities are not considered outstanding in quality. Two separate small sites of Biddle's lupine, a BLM special status plant species, are located adjacent to two of the unit's boundary roads.

Comparison of Citizen's Proposed WSAs and BLM's lands with wilderness characteristics Findings

As mentioned previously, in February 2004, a citizen group provided the BLM Vale District with an inventory report containing maps, photos, and photo logs for 42 proposed new wilderness study areas (WSAs) or wilderness areas of critical environmental concern covering over 2.2 million acres of public land in the planning area (ONDA 2004 a, b, c). BLM did not consider this information during the land use planning process that resulted in the BLM's adoption of the Southeastern Oregon Resource Management Plan (SEORMP) (BLM 2002) The RMP was challenged in Federal Court. On July 14, 2008, the Ninth Circuit Court ruled on the SEORMP in Oregon Natural Desert Association v. Bureau of Land Management, 625 F.3d 1092 (9th Cir. 2010). In part, the Ninth Circuit Court's Order and Amended Opinion required that the;

> "BLM must address in some manner in its revised EIS whether, and to what extent, wilderness values are now present in the planning area outside of existing WSAs and, if so, how the Plan should treat land with such values. We prescribe no particular methodology for that consideration. The BLM must, however, do more than simply assert that it need not consider wilderness values…"

In April 2007, Vale District began its wilderness characteristics inventory update for all public lands located outside of: WSAs and designated Wilderness Areas. The District's inventory update was approved in December 2012.

A comparison of the Citizen Proposed WSAs and BLM's findings on its wilderness characteristics update within the area of the B2H analysis area is presented below. Of the five citizen proposals for new wilderness study areas received by BLM, the BLM wilderness inventory update found wilderness characteristics to be present within portions of two of the citizen proposed areas. Those portions of the citizen proposed areas that were determined by BLM to lack wilderness characteristics were eliminated by BLM primarily due to the presence of roads or human activities not identified in the citizen proposals. The detailed BLM wilderness characteristics update report for these units is available for review at the Vale District Office and on the planning website on the BLM Vale District website at http://www.blm.gov/or/districts/vale/plans/wce/malheur-index.php. Pursuant to 40 C.F.R. § 1502.21, the BLM hereby incorporates its wilderness inventory update by reference as related to these units.

Summary Comparison of Citizen Proposed WSAs and BLM's lands with wilderness characteristics findings (Citizen Proposed Unit Names Are Identified in Parenthesis)

Sand Hollow (Grassy Mtn.)

The BLM found the unit has wilderness character with all inventory characteristics except outstanding primitive recreation. Between the citizen proposal and the BLM inventory, there are differences in boundaries, naturalness, opportunities for primitive and unconfined recreation and supplemental values. The unit's boundaries are nearly identical; however, the BLM unit recognizes a developed right-of-way as a feature of the BLM unit's boundary. The developed right-of-way is for an existing powerline and because of boundary difference; the BLM wilderness character unit is not located within any of the alternatives whereas the Grassy Mountain wilderness character unit is within the Malheur A Alternative. For naturalness, BLM noted the presence of fences, developed springs and a network of primitive vehicle routes that, together, are substantially noticeable across the entire unit. BLM did not find outstanding opportunities for primitive and unconfined recreation because hunting, which is the predominant a recreational use is not of a nature that surpasses opportunities in the general vicinity.

Deer Butte (Pinnacle Point)

The BLM found the unit did not possess wilderness character because of lack of outstanding solitude or primitive recreation. Between the citizen proposal and the BLM inventory there are differences in boundaries, naturalness and supplemental values. The conclusion of the BLM's inventory and citizen proposal for naturalness of the unit was different because consideration of the 27 vehicle routes along the Owyhee River was not made possible because of the timing of the land transfer from Bureau of Reclamation to BLM. It was stated habitat may be present for sensitive species; however some of these species were not considered sensitive by Oregon Department of Fish and Wildlife, BLM or US Fish and Wildlife Service.

Double Mountain (Sagebrush Gulch)

The BLM found the unit has wilderness character with all inventory characteristics except outstanding primitive recreation. Between the citizen proposal and the BLM inventory there are differences in boundaries, naturalness and supplemental values. The conclusion of the BLM's inventory and citizen proposal for naturalness of the unit was different because consideration of the 27 vehicle routes along the Owyhee River was not made possible because of the timing of the land transfer from Bureau of Reclamation to BLM. It was stated habitat may be present for sensitive species; however some of these species were not considered sensitive by Oregon Department of Fish and Wildlife, BLM or US Fish and Wildlife Service.

Sourdough Mountain (Freezeout Ridge/ Rock Canyon)

The BLM found the unit has wilderness character with all inventory characteristics except outstanding primitive recreation. However, between the citizen proposal and the BLM inventory, there are differences in boundaries, naturalness, opportunities for primitive and unconfined recreation and supplemental values. The boundaries are different; the BLM unit included part of the citizen unit as BLM notes roads versus motorized primitive trails. BLM's boundary is nearly the same as the inventory unit identified in the late 1970's, noting that presently the right-of-way is the unit's south boundary. For naturalness, the citizen proposal did not account for abandoned vehicular routes which are rare but still visible to the casual observer. The citizen proposal did not quantify or indicate the location of other known man-made features. The BLM did not find outstanding opportunities for solitude based on the fact that there are no unique or unusual features or attractions within the unit to enhance primitive and unconfined recreation. The BLM indicated a riparian site that provided outstanding opportunities for wildlife viewing and hunting due to "greater habitat" for "birds and animals." It was stated habitat may be present for sensitive species; however some of these species were not considered sensitive by Oregon Department of Fish and Wildlife, BLM or USFWS.

Inventory units that possess wilderness characteristics in the analysis area are shown in Table 3-99.

Figure 3-34 shows wilderness inventory units in the Malheur Resource Area in the vicinity of the B2H Project.

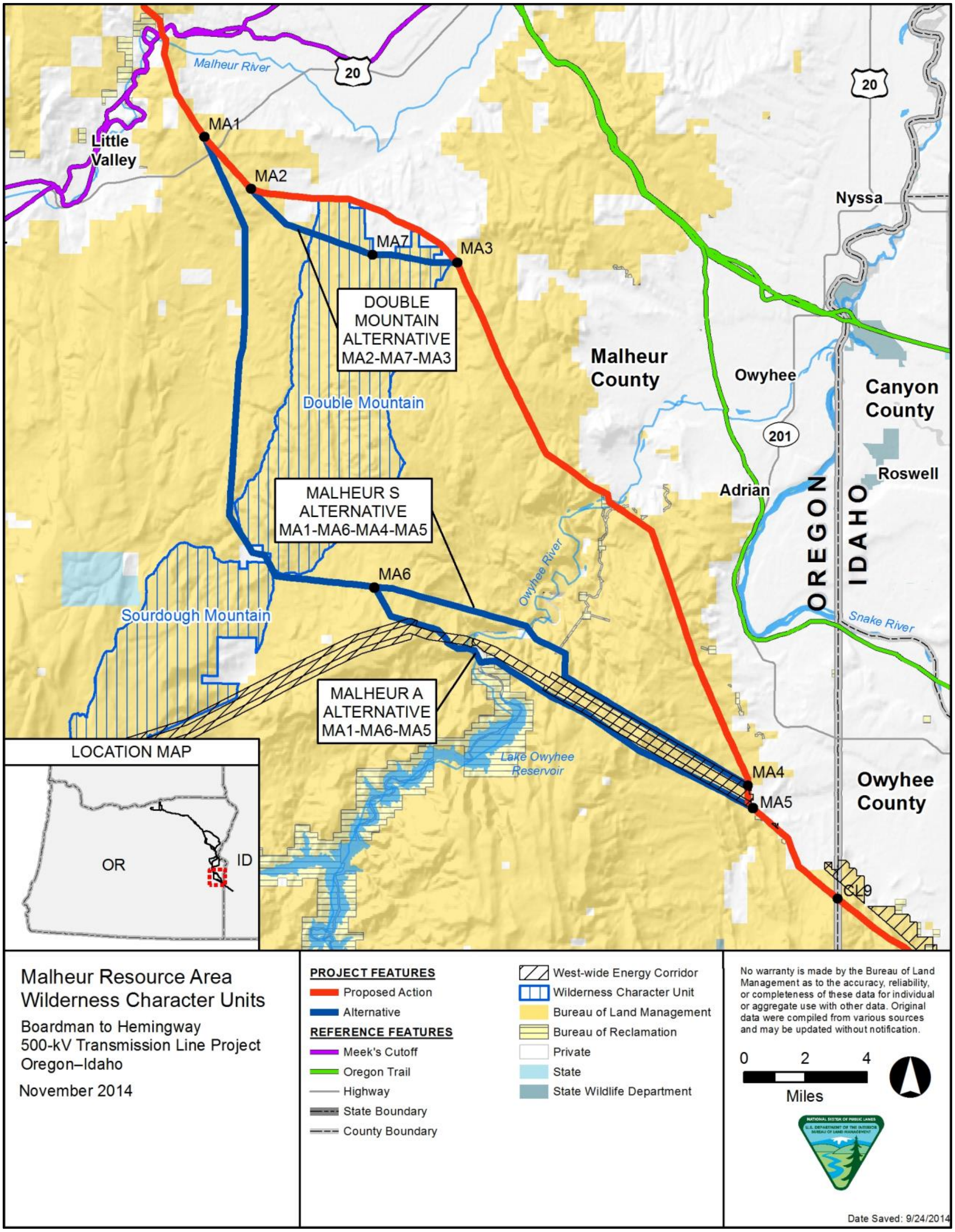


Figure 3-34. Malheur Resource Area Wilderness Characteristics Units

Table 3-99. Inventoried Lands with Wilderness Characteristics in the Analysis Area

Inventory Unit with Wilderness Characteristics	Route that Crosses Inventory Unit	Total Size	Wilderness Inventory Characteristics Present				
			Minimum Size	Naturalness	Outstanding Solitude	Outstanding Primitive Recreation	Supplemental Values
Double Mountain (BLM Malheur Field Office, Oregon)	Proposed Action, Malheur S, Double Mountain	28,181	Yes	Yes	Yes	No	Yes
Sourdough Mountain (BLM Malheur Field Office, Oregon)	Malheur S	15,867	Yes	Yes	Yes	No	Yes

Table Note: The Proposed Action and alternatives would not affect inventoried lands with wilderness characteristics in the BLM Baker Field Office (Oregon) or Owyhee Field Office (Idaho).

Agriculture

Of the cultivated agricultural lands in Segment 5, approximately 23 percent are irrigated, 62 percent are dry farmed and approximately 15 percent are in pasture. BLM and USFS grazing allotments comprise approximately 77 percent of the analysis area in Segment 5.

Segment 6—Treasure Valley

Land Use

Approximately 8 percent of lands in the Proposed Action analysis area in Segment 6 are private. Approximately 77 percent are managed by the BLM and approximately 14% are owned by the State of Idaho. Approximately 1 percent of the lands in the analysis area are owned by Reclamation.

The principal land uses in the Segment 6 analysis area are open shrublands and grasslands (approximately 96 percent) with agriculture and developed lands at approximately 4 percent of the analysis area. County zoning of the Segment 6 analysis area is 99.9 percent agricultural.

Agriculture

Of the cultivated agricultural lands in Segment 6, approximately 87 percent are irrigated, 9 percent are dry farmed and approximately 4 percent are in pasture. BLM and USFS grazing allotments comprise approximately 77 percent of the analysis area in Segment 6.

3.2.6.6 Environmental Consequences – Land Use and Agriculture

This section generally describes the environmental consequences of the Proposed Action and alternatives on land uses and agriculture. It begins with a review of the criteria that were used to determine impact intensity levels, which is followed by a summary of the design features that would be applied to the project and that were utilized in the identification of impacts. This is followed by a description of the effects unique to each project alternative.

INTENSITY OF EFFECTS TO LAND USE AND AGRICULTURE

Effects to current land uses, agricultural operations and recreation are described as high, moderate or low, depending on duration and intensity of the effects as shown in Table 3-100.

Table 3-100. Criteria for Assessing Intensity of Impacts to Land Use and Agriculture

Intensity of Impacts	Description
High	• Areas of very high or high intensity of impact where the project would create a direct long-term conflict with existing land uses • Areas where the project would conflict physically with existing residential, commercial, industrial, military, or agricultural uses (i.e., displacement of homes, businesses, or center-pivot irrigation agriculture fields) • Areas where the project would conflict physically with any designated preservation use area, inventoried area with wilderness characteristics, and unroaded/undeveloped areas in a manner that would reduce the size of the area such that it may not be able to be managed as such • Areas where the project would conflict with any applicable adopted policy or management goal of the affected land-management agency • Areas where the project may require extensive efforts beyond standard construction practices to ensure public or worker safety
Moderate	• Areas of moderate intensity of impact where the project would create an indirect conflict with residential, commercial, agriculture or military uses • Areas where the project would create temporary impacts on agricultural and grazing operations • Areas where the project would indirectly affect any applicable adopted policy or management goal of the affected land-management agency. • Areas where the project would conflict physically with unroaded/undeveloped areas in a manner that would not affect the ability of the area to be managed as lands with wilderness characteristics and/or wilderness
Low	• Areas of low intensity of impact where land use is compatible with a transmission line • Areas in which the effects, while long-term, would not preclude use of the area for agricultural, grazing and resource development uses. • Areas in which effects would be temporary and reversible after construction is concluded • Areas where the project is in a designated (federal or local) utility corridor • Areas of measurable or perceptible change that is small enough that it would not result in a change to ecological condition, a loss of acres eligible to be managed as an unroaded/undeveloped area

NO ACTION ALTERNATIVE

If the No Action Alternative is selected, land uses in the project area, including agricultural operations, would continue unaffected by the B2H Project. Changes in land use are expected over time, but none would be created by the proposed B2H Project.

EFFECTS COMMON TO ALL ALTERNATIVES

This section discusses the types of impacts that would occur with construction of the Proposed Action and each of the alternatives. Specific impact discussions are provided in the sections that follow for the Proposed Action and alternatives. Impacts are categorized with respect to construction phase activities, which are generally short-term, and operations phase impacts that are usually long-term.

CONSTRUCTION

Construction effects on land uses and agriculture would consist primarily of temporary disruption of the current use during the construction period. While project structures would displace current land uses for the duration of the project operation, the construction activities themselves would not likely affect long-term land uses, but could temporarily disrupt some types of current land uses.

Land Use

The anticipated B2H Project effects on agricultural uses are discussed in the Agriculture subsection of this section. Other commercial operations would be affected during project construction by the presence of construction workers and equipment, noise from construction, and areas where access is prohibited for safety reasons. In some cases, access to existing commercial operations may be periodically hindered. Local construction effects would be short-term, occurring for the few months that construction activities occur in any particular area.

Construction impacts on residences near the project area would include dust and noise from construction activities, additional traffic, and emergency access, and are discussed in Public Health and Safety (Section 3.2.12). All existing improvements, such as fences, gates, irrigation ditches, cattle guards, and reservoirs, would be maintained during construction and repaired to pre-construction conditions or better. If pipelines or canals transporting water for livestock, wildlife, and crops are damaged by construction activities, IPC would repair them to landowner or land-management agency specifications.

Planned future commercial and residential developments would be affected during construction only if the Proposed Action or alternatives precluded access to lots intended for other uses, or if the schedule for development coincided with the B2H Project construction schedule. No planned developments that would be affected by the Proposed Action or alternatives have been identified at this point. Direct construction effects to current private land uses would be temporary, and would not physically displace any current land uses on private lands.

Timber Management

Construction through timber management areas would require the removal of trees within the right-of-way and adjacent hazard trees that could fall into transmission structures and access roads. The merchantable value of the timber would be determined and the landowner or land-management agency would be compensated for the timber taken.

Fire Management

Project construction would increase the potential for ignition in the proposed right-of-way corridor due to the operation of equipment capable of producing heat and sparks in the presence of wildland fuel. The states of Oregon and Idaho, along with the USFS and BLM, have requirements for fire preparedness for construction equipment operating during fire season, including the availability of a buckets and shovels, spark arrestors, mufflers, spill-control materials, and brush disposal equipment. During extreme fire danger, state and federal agencies will implement operating restrictions during specified hours. Occasionally, large-scale or controversial construction activities generate opposition that manifests as protest in the form of sabotage. Additionally, random and opportunistic vandalism occurs. Either of these situations may result in an arson fire set to damage equipment or impede progress. While arson-caused fires do occur, they are extremely rare.

The construction of access roads used for construction may increase available access during the construction period. Increasing access can lead to an increased potential for human-caused fire ignitions, either accidental or intentional.

Construction facilities where equipment and materials are stored and construction areas where people work are likely to be designated as high-value areas that need protection from wildland fire where they may have been a lower priority otherwise. These additional areas of high value place an increased demand on fire-suppression personnel and equipment, particularly when other fires require attention.

Motor-vehicle traffic mobilizing into and out of the proposed right-of-way area could increase emergency response times if fire responders encounter construction-related traffic en-route to an incident. There is a low potential for fire responders to encounter traffic associated with right-of-way construction on low-capacity roads. Traffic bottlenecks will not be expected to affect firefighter safety or fire size unless responders encounter convoys of ingress/egress traffic on low-capacity roads.

Ceded Lands, Indian Trust Assets and Tribal Traditional Use Areas

Construction and operation of the B2H Project may have direct or indirect impacts to reserved treaty rights and resources on ceded lands of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), as well as impacts to natural and cultural resources considered significant to the Nez Perce Tribe, Burns Paiute Tribe, Confederated Tribes of the Colville Reservation, Shoshone-Bannock Tribes of the Fort Hall Indian Reservation, Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, and the Fort McDermitt Paiute and Shoshone Tribe who consider portions of, or the entirety of, the project area in their area of traditional use.

The CTUIR and Shoshone-Paiute Tribes have prepared ethnographic studies that may identify specific resources of concern. BLM is conducting ongoing consultation with the Indian Tribes who consider the project area to exist within their traditional use area. B2H Project effects to Indian Trust Assets and tribal traditional use areas are described in Section 3.2.8 (Cultural Resources) and sections dealing with the relevant resources (wildlife, vegetation, fisheries).

Agriculture

Short-term disruption of farming activities along the right-of-way would occur locally during B2H Project construction.

Crop Production and Irrigation

In currently cultivated farmland, direct effects could include destruction of existing crops due to project construction requiring untimely entry to fields during the active growing season. Irrigation schedules could also be affected by interruptions in power or the need to shut off the irrigation for safety even if there are no direct damages to crops. The Proposed Action and alternatives have been sited to follow field boundaries to the extent feasible and to avoid displacing center pivot irrigation fields and other high-value agricultural infrastructure to the extent possible.

Prime Farmland

The placement of tower structures would be the principal construction and operations impact on prime farmland. Construction activities (e.g. some access roads, work areas, staging, wire pulling/splicing) would temporarily affect prime farmland activities. Potential impacts to prime farmland from transmission line construction include soil erosion, damage to agricultural land drainage and irrigation systems, the mixing of topsoil and subsoil, the potential loss of topsoil, and soil compaction. Reclamation measures would keep disturbed prime farmland soil losses to a minimum. Construction areas not to be used for operations would be reclaimed as soon as possible following construction.

Prime farmland within the construction areas would be unavailable for agricultural uses during the construction interval. However, except for tower locations (discussed in Operations, below), agricultural uses could resume when the installation of the transmission line is complete.

Livestock Grazing

Grazing is a primary use of public and private lands in the B2H Project area, and is a major source of income for private landowners in the B2H Project area. During construction, approximately 5,000 acres of federal, state and private rangeland would be impacted. Approximately 2,000 acres of this rangeland are within federal grazing allotments. Rights-of-way across grazing allotments and rangeland would be obtained through right-of-way grants, special use permits, or easements negotiated between the Applicant and various federal, state, and local governments; other companies; and private landowners. The short- and long-term direct and indirect impacts that may occur to livestock grazing are discussed in this section. For acres affected during construction by alternative, see Table 3-116. The socioeconomic impacts on grazing are discussed in Section 3.2.11.

Short-term impacts to grazing would result from temporary construction disturbance (include pulling yards, fly yards (helicopter landing areas) and staging areas, and temporary access roads. Impacts could include:

- Potential spread of noxious and invasive plant species,
- Interference with livestock management,

- Interference with access to livestock operations, and
- Potential increased mortality of livestock from increased traffic.

Long-term impacts on grazing would result from permanent construction disturbance due to loss of vegetation on land occupied by structure pad areas, communication stations, substations and permanent access roads. Short- and long-term impacts on grazing would occur in upland rangeland habitat.

Aerial Spraying

The construction of the B2H Project could have a temporary direct effect on crop spraying. Applicators might need to modify spraying patterns due to construction. The presence of construction workers could delay applications.

Operations

Land Use

During operations, IPC would have the right for ingress and egress necessary for operational purposes, including cutting, trimming, and removal of trees or other obstructions that interfere with the operation, maintenance, and repair of transmission line facilities. Other land use restrictions in the right-of-way would include the erection or placement of any building or structure; the storage of flammable material; or bringing equipment or vehicles into the right-of-way that exceed 14 feet in height. The right-of-way would continue to be used for roads; cultivating agricultural crops; and other general purposes consistent with the limitations. Special access provisions in mining and agricultural areas could be negotiated with the landowner to maintain existing practices.

The transmission line easement could affect property values. The impact on property values is a damage-related issue that would be negotiated between the landowner and IPC during the land title or easement acquisition process. The easement acquisition process is designed to provide fair compensation to the landowner for the right to use the property for transmission line construction and operation. The easement value, in theory, is equal to the difference in value of the affected property before and after easement acquisition and construction of the proposed facilities. Land valuation and easement negotiation on private property would not involve the BLM or other land managing agencies.

B2H Project facilities including towers, access roads and substations would permanently displace some current land uses within the right-of-way, such as aerial application of agricultural treatments, but the transmission line is located so as to minimize long-term disruptions of current land uses. Many existing land uses, such as most agricultural operations, grazing, and recreational uses could continue within the right of way area.

Military Training Routes

The Proposed Action and some of the alternatives cross through military training routes. During operations, the presence of towers and conductors would create potential hazards for military aviators. Towers and/or conductors and/or shield wires would be marked with high-visibility devices (i.e., marker balls or other marking devices) where required by governmental agencies with jurisdiction (i.e., FAA). All tower heights would be less than 200 feet to avoid the need for aircraft obstruction lighting. Impacts associated with each alternative are discussed further in the sections that follow.

Timber Management

During operations, the presence of transmission line structures and conductors could interfere with aerial logging operations, such as helicopter or skyline logging. Vegetation management will require the occasional removal of timber in the right-of-way. Both authorized and unauthorized vehicular traffic on access roads used for the maintenance and operations of a new transmission line would increase the risk of wildland fire to some extent. Fires could spread to adjacent land used for timber management and could damage and remove existing timber.

Fire Management

The operation of the proposed B2H Project would influence fire management in the following ways:

- The use of maintenance equipment in the right-of-way could start fires.
- The transmission line could cause fires from downed power lines, birds or airplanes striking a line and starting a fire upon hitting the ground, sparking at substations and transformers or, during smoky or humid conditions, electric arcs hitting the ground.
- Increased public access could lead to additional human caused fires.
- B2H facilities would require protection from fire.
- The presence of project towers and conductors could interfere with aerial suppression or fuel reductions operations, including helicopters, single-engine air tankers, air tactical aircraft, utility aircraft, aerial supervision modules, heavy air tankers, smokejumper aircraft, and large transport aircraft.
- The presence of the transmission line could delay firefighters while they wait for the line to be de-energized for safety.

The B2H transmission lines could increase the potential for fires along the right-of-way, particularly during summertime red-flag warnings with low humidity, low-fuel moisture and high winds (BLM 2005).

The presence of a high-voltage transmission line may generate opposition that manifests itself as protest in the form of sabotage. Additionally, random and opportunistic vandalism has occurred on other transmission lines. Either of these situations may result in an arson fire set to damage equipment. Arson caused fires are, however, rare.

The B2H project right-of-way would become a high priority for fire suppression and fuels management where it traverses undeveloped areas. Clearing trees and large brush and treating weeds within the proposed right-of-way would decrease the continuity of ladder fuels, and could increase the fire-free interval in the vicinity of the proposed right-of-way (Deanne et al. 1998). Adding areas of high value for fire protection can place an increased demand on fire-suppression personnel and equipment, particularly when other fires require attention.

Structures and facilities proposed for the right-of-way could narrow the range of suppression techniques used on wildfires in the vicinity. Prescribed fire would also be limited as a management tool in the vicinity of the proposed right-of-way for the same reasons. This would reduce opportunities to reintroduce fire into localized ecosystems along the Proposed Action and alternatives, but the overall reduction would be low because fire is not desirable as a management tool in a majority of areas due to existing resource conditions and structures.

Some suppression tactics in the right-of-way vicinity may become inappropriate due to the safety hazard the project infrastructure represents to firefighters and the potential for damage to the infrastructure in the right-of-way. Aerial operations may become inappropriate near the right-of-way because these operations will endanger pilots and firefighters and cause potential damage to the infrastructure in the right-of-way. Direct suppression using engines and hand crews may also become inappropriate where it exposes firefighters to an unacceptable level of risk during periods of high wind and smoke. These limitations could have a cumulative effect where the right-of-way crosses areas of sensitive resources, such as where heavy equipment to construct a fire line is already limited. Limitations on fire-suppression tactics in the vicinity of the right-of-way could result in a minor increase in the extent of fires that occur there.

In forested environments, broadcast burning may become an inappropriate tool to dispose of slash in the vicinity of the right-of-way.

Firefighter access to an area may be delayed if the transmission line is energized and poses a threat to firefighter safety. Firefighters will have to wait until the line can be de-energized to prevent injuries or fatalities from the electrical hazard.

Agriculture

Viewed in terms of agricultural operations in the potentially affected counties, the total estimated operations disturbance to agricultural lands represents a very small portion of the agricultural areas of affected counties, and is unlikely to noticeably affect overall agricultural production and employment. However, localized impacts to individual farmers would occur and could be significant to the individual operations affected. IPC would negotiate damage-related issues with private property owners, such as reductions in the acreage available for cultivation, during the easement acquisition process. Rights-of-way for transmission line facilities on private agricultural lands would be obtained by IPC either in fee by deed, or by perpetual easements.

Crop Production and Irrigation

Center pivots operate most efficiently when they complete the entire circle and continue in the same direction on a permanent basis. If a structure is placed in its path, the pivot can be programmed to reverse its direction. This programming requires additional equipment at a cost of approximately $5,000. When reversing direction is required, the frequency of application to a specific ground site becomes imbalanced depending on where in the arc of the pivot circle the site is located. For example, assume a pivot is programmed to complete its entire circle in 24 hours in the same direction on a continual basis. Each site in the circle is watered every 24 hours. If it is required to reverse its path due to a structure preventing it from completing the entire circle, the frequency of application on each end of the path will be 48 hours, and the frequency would be 24 hours halfway around the circle. This imbalanced application could significantly affect crop production. Alternatively, the pivot direction could be reversed, with no water applied, to its starting point. Each cycle would start and water would be applied going in one direction. At a minimum, this would result in a 12-hour period in which no water is applied.

A tower located near the outer end of a center pivot could result in the pivot being shortened, thereby reducing the area covered by the pivot for its entire circumference. A 100-foot reduction in the length of the pivot arm would reduce the area covered by approximately 18 acres. Wheel-line systems cannot be adjusted if a structure is placed in its path. If a tower is placed in its path, the line must be partially disassembled, moved around the tower, and then reassembled for continued operation. This would result in an indefinite inconvenience and increased labor costs.

Mechanical irrigation, automated farming methods, and farming equipment with large spans (up to 100 feet), are all affected by overhead conductors and support structures. Acreage would be taken out of production around the base of support structures, and the support structures would be in the way of farm equipment. The diversion of equipment around structures, reduction of cultivated areas, and the additional time needed to accommodate structures increase production costs. There could be an additional loss of crop production if structures are set close enough to the edge of a field that farm equipment cannot fit between the structure and the edge of the field. It is difficult to achieve uniformity of application of pesticides and fertilizer around transmission towers when using ground application techniques. After a ground application is made around a tower it is difficult on the next pass for the operator to determine where the outer edge of the spray application was made and align the sprayer to avoid overlapping; consequently, double spraying could occur. Depending on the product, this could result in crop damage. A transmission line crossing a field at an odd angle will also make it more difficult to maintain a uniform application.

Prime Farmland

The occupation of prime farmland by tower structures would be the principal impact during B2H Project operations. Approximately 4 structures per mile would be installed. Self-supporting lattice towers occupy a 40 x 40-foot area at ground level, amounting to 6,400 square-feet per mile. The total area of prime farmland that would be affected by the Proposed Action operations would be approximately 600 acres, compared to the approximately 3,470 acres that would be disturbed during construction. The prime farmland under the structures would be lost to production. The area of loss of prime farmland would be less than the temporary disruptions resulting from construction activities, but would be for a longer time interval, 50 years or more compared to the 24 to 30 month construction period.

Livestock Grazing

During operations and maintenance, pasture and rangeland would be removed from grazing where they are occupied by support structures, substations, regeneration stations, or access roads. Acres of grazing allotments disturbed during operation and maintenance are shown in Table 3-121. Other operations and maintenance activities would not affect livestock grazing.

Aerial Spraying

The presence of the B2H Project transmission line would increase the risk to aerial applicators. The B2H Project is not proposing the use of tower guy wires, which is a safety advantage to aerial applicators because guy wires are difficult to see and cover a larger ground space than towers without them. Aerial spraying near hills and ridges can cause downdrafts and updrafts, which means increased risks to the applicator if transmission lines are located near that type of terrain.

Spray coverage uniformity would be affected by the presence of the B2H Project transmission lines. By maintaining a safe lateral distance from the line, the product would not adequately cover the crop located under the line, and the desired results of controlling weeds, insects, or diseases would not be achieved.

Transmission lines located along the edges of fields, existing roadways, or natural boundaries rather than through existing fields would result in less risk to the applicator and more efficiency in product application, as well as more land being used to its capacity compared to lines traversing across the field. Adverse effects on the ability of aerial applicators to safely provide services would increase costs reduce efficiency, and potentially damage crops from ground applications and lower crop yields.

DESIGN FEATURES

LAND USE

Fire Management

Fire Management design features presented in Appendix C include:

- FIRE 1 - A Fire Prevention and Suppression Plan that meets all required State, and Federal requirements shall be approved by the appropriate agency prior to the start of field activities and executed appropriately for the project.
- FIRE 2 - Properly manage, dispose, and remove slash piles as a result of construction or maintenance activities. Slash piles may increase fire fuel loads in the area as well as provide cover for predators.

Appendix J of the Revised POD (IPC 2011) contains a Framework Fire Prevention and Suppression Plan that includes fire prevention measures and protocols for coordination of fire prevention and suppression activities. The final Fire Prevention and Suppression Plan would be finalized and its provisions would become conditions of approval of the B2H Project.

AGRICULTURE

The Revised POD includes a draft Framework Agricultural Protection Plan (IPC 2011: Appendix I). The final Agricultural Protection Plan would include measures to mitigate impacts and provide landowner compensation for agricultural impacts, and would be adopted as a part of the conditions of approval of the right-of-way grant.

In addition, Appendix C contains design features to avoid and minimize disruptions to agricultural operations and prime farmland which would be implemented during the construction period. Agriculture design features would include:

- AGRI-1—Maintain an active program of liaison with landowners and tenants, including specific points of contact whose responsibilities would include preconstruction inventory, notices, complaint resolution, damage assessment, and negotiation and compensation.
- AGRI-2—Prior to any construction, IPC or their agent together with the landowner, the landowner’s designate, and/or the tenant would examine each affected property to inventory crops, livestock, fences, irrigation systems, drain systems, etc. The landowner and/or tenant would be compensated for 100 percent of the damages caused to crops as a result of the construction and damaged improvements would be replaced or compensated.
- AGRI-3—IPC and the landowner would seek a mutual agreement concerning post-construction claims for damages or crop deficiencies. In the event IPC and the landowner are unable to reach a mutually satisfactory agreement, such claims would be assessed on an individual basis by a qualified agricultural specialist. The qualified agricultural specialist would be selected on a claim-by-claim basis by agreement of a representative designated by IPC and a representative designated by the party Farm Bureaus (or the landowner, at the election of the landowner). IPC would pay the cost of retaining the qualified agricultural specialist. The agricultural specialist would review and evaluate claims of damages. If the agricultural specialist approves the claim, IPC would pay compensation for the claim in the amount determined by the agricultural specialist. Claims would be evaluated in a timely manner following notification of such damages or deficiencies from the landowner and/or tenant.
- AGRI-4—IPC would establish procedures for determining ingress and egress routes with landowners and tenants, protection methods for off-right-of-way roads over agricultural lands and on right-of-way pads.
- AGRI-5—IPC would establish the location of temporary roads to be used for construction purposes through negotiation with the landowner, with existing farm lanes or two tracks as preferred temporary access roads.
- AGRI-6—IPC would contact landowners and tenants to identify the location of irrigation systems and wells, underground irrigation water pipes, well systems, and drainage system that intersect the construction area.
- AGRI-7—IPC would restore affected agricultural land to the pre-construction condition or provide compensation.
- AGRI-8—On agricultural land, the right-of-way would be aligned, where practicable, to reduce the impact on farm operations and agricultural production.
- AGRI-9—Fences, gates, and walls would be replaced, repaired, or reclaimed to their original condition as required by the landowner or the land-management agency in the event they are removed, damaged, or destroyed by construction activities. Temporary gates or enclosures would be installed only with the permission of the land owner or the land-management agency and would be removed/reclaimed following construction. Cattle guards or permanent access gates would be installed where new permanent access roads cut through fences on BLM-, Reclamation- and USFS-administered lands.

- AGRI-10—In cultivated agricultural areas, soil compacted by construction activities would be de-compacted
- AGRI-11—If livestock are displaced during Project construction, temporary water facilities would be provided during the time of displacement.

Residual Proposed Action Construction Effects

Land Use

Table 3-101 shows the anticipated acres of construction disturbance for the Proposed Action by land ownership in each county. Table 3-102 shows the anticipated acres of construction disturbance by land use type. During construction, a total of 6,848.5 acres would be disturbed, temporarily displacing current land uses in these areas. The short-term direct and indirect construction effects on general land uses in the analysis area of the Proposed Action would be moderate, in that they would create an indirect conflict with residential, commercial, agriculture and military uses; would create temporary impacts on agricultural and grazing operations and would indirectly affect applicable adopted policies and management goals of the affected land-management agencies.

Table 3-101. Proposed Action Acres of Construction Disturbance by Land Ownership

Route Name	County	Disturbance Acres by Ownership					Total Acres
		BLM	Reclamation	Private	State	USFS	
Proposed Action	Morrow	0.0	0.0	937.4	0.0	0.0	937.4
Proposed Action	Umatilla	0.0	0.0	1,095.7	0.0	0.0	1,095.7
Proposed Action	Union	18.6	0.0	729.6	0.0	113.3	861.5
Proposed Action	Baker	373.4	0.0	1,064.6	45.4	0.0	1,483.4
Proposed Action	Malheur	990.0	16.4	574.5	1.2	0.0	1,582.1
Proposed Action	Owyhee	558.2	3.1	113.4	62.0	0.0	736.7
Proposed 138/69-kV Rebuild	Baker	5.5	0.0	46.5	0.0	0.0	52.0
Total Proposed Action		1,945.7	19.5	4,561.7	108.6	113.3	6,848.5

Table 3-102. Proposed Action Acres of Construction Disturbance by Land Use Type

Route Name	Disturbance Acres by Land Use Type*									Total Acres
	County	Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub / Grass	Wetland	Woodland	
Proposed Action	Morrow	602.1	0.0	19.8	0.0	0.9	363.6	0.4	0.1	938.1
Proposed Action	Umatilla	357.8	0.0	13.6	142.6	0.4	551.5	13.4	50.3	1,095.6
Proposed Action	Union	14.1	17.1	3.2	255.5	0.3	443.0	16.8	113.7	861.7
Proposed Action	Baker	26.1	2.3	3.0	0.0	1.5	1,444.8	2.9	7.8	1,483.4
Proposed Action	Malheur	98.7	21.1	10.8	0.0	3.6	1,446.6	4.5	0.2	1,582.1
Proposed Action	Owyhee	21.5	0.5	20.1	0.0	0.0	697.7	0.3	0.0	737.8
Proposed 138/69-kV Rebuild	Baker	9.7	0.1	3.0	0.0	0.1	38.9	2.2	0.3	51.0
Total Proposed Action		1,130.0	41.1	73.5	398.1	6.8	4,986.1	40.5	172.4	6,848.5

AGRICULTURE

Table 3-103 shows acres of construction disturbance to agricultural lands that would be caused by the Proposed Action by agricultural type. Table 3-104 shows the miles of EFU lands crossed by the Proposed Action.

Table 3-103. Acres of Proposed Action Construction Disturbance by Agricultural Type

Route Name	County	Acres by Agriculture Type [1]				Total Agriculture Construction Acres
		CRP	Dryland Farming	Irrigated Agriculture	Pasture/Hay	
Proposed Action	Morrow	15.2	471.6	114.8	0.5	602.1
Proposed Action	Umatilla	0.0	134.6	204.1	19.1	357.8
Proposed Action	Union	0.0	4.1	8.7	1.3	14.1
Proposed Action	Baker	0.0	4.1	18.5	3.5	26.1
Proposed Action	Malheur	0.0	56.5	39.6	2.6	98.7
Proposed Action	Owyhee	0.0	10.5	9.5	1.5	21.5
Proposed 138/69kV Rebuild	Baker	0.0	1.1	3.3	5.3	9.7
Total Proposed Action		15.2	682.5	398.5	33.8	1,130.0

Table 3-104. Miles of EFU Crossed by Proposed Action

Route Name	County	Miles of EFU Crossed
Proposed Action	Morrow	46.6
Proposed Action	Umatilla	41.4
Proposed Action	Union	3.5
Proposed Action	Baker	69.2
Proposed Action	Malheur	1.8
Proposed Action	Owyhee	0.0
Proposed 138/69kV Rebuild	Baker	5.3
Total Proposed Action		167.8

The short-term direct effects of construction of the Proposed Action are anticipated to directly affect a total of 1,130 acres of all types of agricultural operations during the construction period and would therefore be a moderate impact on agriculture in general, in that impacts on agricultural and grazing operations would be temporary during the construction period and limited to areas of construction activity.

Grazing

Construction of the Proposed Action is anticipated to disturb approximately 1,888 acres of grazing allotments on BLM-managed lands and approximately 113 acres of grazing allotments on National

Forest System lands (Table 3-105). Figures are not readily available for acres of private grazing lands that would be affected by B2H Project construction. However, if it is assumed that part of the acreage listed as dryland farming and pasture/hay is assumed to be used for grazing, total construction effects to grazing could be as high as 2,700 acres. Overall, the effects to grazing by the Proposed Action and alternatives would be short-term and localized during construction, and therefore would be moderate.

Table 3-105. Proposed Action Construction Disturbance Acres of BLM and USFS Grazing Allotments by County

Route Name	County	Construction Disturbance Acres of Grazing Allotments [1] on USFS- and BLM-managed Lands by Ownership [2]		Total Grazing Allotment Construction Acres
		BLM	USFS	
Proposed Action	Morrow	N/A	N/A	N/A
Proposed Action	Umatilla	N/A	N/A	N/A
Proposed Action	Union	13.1	112.6	125.7
Proposed Action	Baker	353.0	0.0	353.0
Proposed Action	Malheur	965.2	0.0	965.2
Proposed Action	Owyhee	552.8	0.0	552.8
Proposed 138/69kV Rebuild	Baker	4.1	0.0	4.1
Total Proposed Action		1888.2	112.6	2000.8

Table Notes: [1] For Idaho: boundaries of the livestock grazing pastures located within the Idaho BLM; allotment is comprised of at least one pasture. For Oregon: livestock grazing allotment and pasture boundaries with associated attributes describing some basic characteristics of the allotments and pastures. [2] Merged Surface Management Agency data from Idaho and Oregon BLM.

RESIDUAL PROPOSED ACTION OPERATIONS EFFECTS

LAND USE

Operations disturbances to uses on private properties by ownership are provided for the Proposed Action in Table 3-106. The areas of long-term disturbance for B2H Project operations would be smaller than the areas disturbed for construction. Operations disturbances to uses on private properties by land use type are provided for the Proposed Action in Table 3-107. Operations on federal lands would be consistent with applicable land use plans, except as described in Section 3.4, land use plan amendments. Overall, effects to general land uses in the B2H Project area would be low in that the effects, while long-term, would not preclude use of the area for other agricultural, grazing and resource development uses.

Designated Corridors and Existing Rights-of-Way

Portions of the Proposed Action are located within the West-Wide Energy corridor and other utility corridors designated by the BLM and USFS. The Proposed Action across the Wallowa-Whitman National Forest (approximately six miles) is located entirely within a USFS designated transmission line corridor. The Proposed Action from near Encina (south of Baker, Oregon) to Huntington, Oregon (approximately 35 miles) is within West-Wide Energy corridor 250-251. In Malheur County, the Proposed Action alignment is within or parallels the BLM Vale District designated transmission line corridor from near the mouth of the Owyhee Canyon at approximately milepost (MP) 259 to approximately MP 272 where it joins West-Wide Energy corridor 11-228. The Proposed Action then follows or parallels West-Wide Energy corridor 11-228 approximately 33 miles to the Hemingway Substation. The ROD designating the WWEC includes a number of Interagency Operating Procedures (IOPs) which are best management practices (BMPs) that are applicable to projects located within the West-Wide Energy corridor. The design features listed in Appendix C incorporate the IOPs or equivalent standards to be applied project-wide. In some locations, the presence of an existing 230- or 500-kV transmission line right-of-way could be considered to establish a utility corridor without formal designation. Although not within a federally designated utility corridor, the Proposed Action aligns with existing utility rights-of-way other than the West-Wide Energy corridor or BLM District for approximately 42 miles.

Federal Land-Use Plans

Potential effects of the Proposed Action on public resources are considered based on land use and management plans administered by the BLM, USFS, and Reclamation. Where the location or effects of the Proposed Action would be inconsistent with the current management direction of applicable plans, either the Proposed Action would need to be modified to comply with the plan provision, or the plan would need to be amended to allow for approval of the project.

Hard Trigger Herd Management Area

The Proposed Action crosses 8.3 miles of the northeastern portion of the BLM Hard Trigger Herd Management Area (HMA) in Owyhee County, Idaho. The HMA is maintained by the BLM in accordance with The Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195). Construction of the Proposed Action would temporarily disturb approximately 193 acres in the BLM Hard Trigger HMA which includes 66,063 total acres of public and other land within the BLM Owyhee Field Office, and is located south of the Snake River between Murphy and US Highway 95 to the west. HMA characteristics include rolling hills and sagebrush steppe. The approved management level for the Hard Trigger HMA is between 66 and 130 animals. The horses share the HMA with other wildlife, including deer, antelope and upland game birds. Because construction would affect less than 1% of the land within the Hard Trigger Herd Management Unit and would be located near the northeastern boundary of the HMA, direct and indirect construction and operations effects to wild horse herd management operations are anticipated to be low. Direct effects would include loss of rangeland associated with clearing pulling and tensioning sites, staging area, access roads, tower sites and potential spread of noxious weeds.

Table 3-106. Proposed Action Acres of Operations Disturbance by Land Ownership

Route Name	County	Disturbance Acres by Ownership [1]					Total Disturbed Acres
		BLM	Reclamation	Private	State	USFS	
Proposed Action	Morrow	0.0	0.0	149.1	0.0	0.0	149.1
Proposed Action	Umatilla	0.0	0.0	185.9	0.0	0.0	185.9
Proposed Action	Union	2.5	0.0	124.5	0.0	18.5	145.5
Proposed Action	Baker	83.2	0.0	208.3	10.0	0.0	301.5
Proposed Action	Malheur	192.0	2.9	99.1	0.0	0.0	294.0
Proposed Action	Owyhee	110.5	1.4	12.1	20.8	0.0	144.8
Proposed 138/69kV Rebuild	Baker	1.6	0.0	14.3	0.0	0.0	15.9
Total Proposed Action		389.8	4.3	793.3	30.8	18.5	1236.7

Table 3-107. Proposed Action Acres of Operations Disturbance by Land Use Type

Route Name	County	Disturbance Acres by Land Use Type [1]								Total Acres
		Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub/ Grass	Wetland	Woodland	
Proposed Action	Morrow	92.1	0.0	4.0	0.0	0.5	60.5	0.0	0.0	149.1
Proposed Action	Umatilla	51.1	0.0	3.6	34.9	0.2	87.8	5.5	10.2	185.9
Proposed Action	Union	2.0	0.4	0.5	46.8	0.2	67.9	5.5	22.5	145.4
Proposed Action	Baker	1.8	0.9	0.8	0.0	0.3	295.7	0.8	1.6	301.5
Proposed Action	Malheur	3.6	2.8	0.8	0.0	1.4	284.7	1.4	0.1	294.1
Proposed Action	Owyhee	5.0	0.1	3.0	0.0	0.0	137.5	0.1	0.0	145.4
Proposed 138/69kV Rebuild	Baker	3.4	0.1	0.9	0.0	0.0	11.4	0.8	0.1	15.9
Total Proposed Action Acres		159.1	4.3	13.6	81.7	2.6	945.5	14.1	34.5	1236.7

Agriculture

Acres of operations disturbance from the Proposed Action to agricultural operations by type are shown in Table 3-108. The Proposed Action would remove approximately 45 acres of irrigated agriculture from production during project operations and approximately 100 acres of dryland farming.

Project operations of the Proposed Action are expected to remove approximately 600 acres of prime farmland from production for the duration of the project (Table 3-109). Operations of the B2H Project would permanently occupy the lands on which project facilities are constructed, but some agricultural activities could continue within the right-of-way. The overall operations effects of the Proposed Action to all agricultural lands would be long-term but would have a low overall effect on agricultural operations, given the available agricultural lands in the project analysis area.

Table 3-108. Acres of Operations Disturbance by Agricultural Type

Route Name	County	Disturbance Acres by Agriculture Type [1]				Total Agriculture Operation Acres
		CRP	Dryland Farming	Irrigated Agriculture	Pasture/ Hay	
Proposed Action	Morrow	4.3	74.4	13.4	0.1	92.1
Proposed Action	Umatilla	0.0	20.6	24.8	5.7	51.1
Proposed Action	Union	0.0	0.9	0.8	0.3	2.0
Proposed Action	Baker	0.0	0.1	0.7	1.0	1.8
Proposed Action	Malheur	0.0	1.4	1.4	0.8	3.6
Proposed Action	Owyhee	0.0	1.9	2.4	0.7	5.0
Proposed 138/69-kV Rebuild	Baker	0.0	0.4	1.3	1.7	3.4
Total Proposed Action		4.3	99.7	44.8	10.3	159.1

Table 3-109. Acres of Operations Disturbance of Prime Farmland

Route Name	County	Disturbance Acres of Prime Farmland [1]			Total Prime Farmland Operation Acres
		Farmland of Statewide Importance	Prime Farmland if Irrigated	Prime Farmland if Irrigated and Drained	
Proposed Action	Morrow	65.7	64.9	0.0	130.6
Proposed Action	Umatilla	107.1	51.5	0.0	158.6
Proposed Action	Union	68.8	8.3	3.6	80.7
Proposed Action	Baker	201.3	10.6	0.2	212.1
Proposed Action	Malheur	0.6	0.0	0.0	0.6
Proposed Action	Owyhee	0.0	2.2	0.8	3.0
Proposed 138/69kV Rebuild	Baker	6.0	6.5	0.6	13.1
Total Proposed Action		449.5	144.0	5.2	598.7

Grazing

The total area of land in BLM grazing allotments made unavailable for grazing by operation of the Proposed Action would be approximately 380 acres (Table 3-110). An additional 18 acres would be affected on USFS lands. The long-term effects of operation of the Proposed Action on grazing would be low in the context of the available grazing lands in the project analysis area.

Table 3-110. Operation Disturbance Acres of BLM and USFS Grazing Allotments

Route Name	County	Operation Disturbance Acres of Grazing Allotments* on USFS- and BLM-managed Lands by Ownership**		Total Grazing Allotment Operation Acres
		BLM	USFS	
Proposed Action	Union	2.1	18.4	20.5
Proposed Action	Baker	79.8	0.0	79.8
Proposed Action	Malheur	188.2	0.0	188.2
Proposed Action	Owyhee	109.0	0.0	109.0
Proposed 138/69kV Rebuild	Baker	1.1	0.0	1.1
Total Proposed Action		380.2	18.4	398.6

*For Idaho: boundaries of the livestock grazing pastures located within the Idaho BLM; allotment is comprised of at least one pasture. For Oregon: livestock grazing allotment and pasture boundaries with associated attributes describing some basic characteristics of the allotments and pastures.

**Merged Surface Management Agency data from Idaho and Oregon BLM.

Timber Management

The Proposed Action would require clearing of approximately 571 acres of forested lands, 90 acres of which would be located in the Wallowa-Whitman National Forest. Forested lands managed by the BLM and State of Oregon and private lands would also be affected. The number of acres of forest in the Wallowa-Whitman Forest Plan timber management areas removed from the timber base due to right-of-way clearing and maintenance would not be large enough to affect the programmed harvest level for the Wallowa-Whitman National Forest. Overall, long-term direct effects to timber management for the Proposed Action would be low in the context of the available timber in the project analysis area.

Fire Management

Fire management effects of the Proposed Action and the alternatives would be similar and are described under Effects Common to All Alternatives.

Residual Effects by Project Segment

The impacts of each of the alternatives to the Proposed Action are discussed in this section, which is organized by segment and the alternatives that occur within each segment. Impacts of the alternatives are compared to the Proposed Action in order to illuminate the differences, including advantages and disadvantages of each alternative. Table 3-111 through Table 3-121 at the end of this section provide summary comparisons of each of the alternatives. Construction and operation disturbances to land uses are provided for the Proposed Action and alternatives in Table 3-111, Table 3-112, Table 3-117, and Table 3-118. Construction and operations disturbances to agriculture and grazing are provided in Table 3-113 through Table 3-116 and Table 3-119 through Table 3-121.

Segment 1—Morrow-Umatilla

Nearly all of the land in the analysis area for the Proposed Action and alternatives in Segment 1 is private. There are two alternatives and one variation to the Proposed Action in Segment 1. They are the Horn Butte Alternative, Longhorn Alternative and Longhorn Variation.

Land Use

Each of the alternatives in this segment would impact fewer acres of private property than the Proposed Action. Specifically, the Horn Butte Alternative would have 24 fewer acres of private property and the Longhorn Alternative 149 fewer acres of private property. The Longhorn Variation would cross the least amount of private land, 185 fewer acres than the Proposed Action. The right-of-way for the Longhorn Variation would cross state land and would extend onto land within the Naval Weapons System Training Facility Boardman, managed by the U.S. Navy. The Longhorn Alternative and Longhorn Variation both cross a Reclamation canal. Neither the Proposed Action nor the Horn Butte Alternative would affect state, U.S. Navy or Reclamation lands.

The areas of long-term disturbance for B2H Project operations would be smaller than the areas disturbed for construction, but the relative private/public ownership proportions would be similar for these alternatives.

Direct and indirect effects to land uses of the alternatives would be low in the context of overall area land uses, but would be moderate to high to the landowners affected. As with the Proposed Action, effects on property values is a damage-related issue that would be negotiated between the landowner and IPC during the land title or easement acquisition process. Any land valuation or easement negotiations on private property would not involve the BLM or other land managing agencies.

Agriculture

Construction of the Longhorn Alternative would disturb approximately 134 more acres of irrigated agriculture than the Proposed Action. Some of the irrigated agricultural lands affected by the Longhorn Alternative are under tree cultivation. While cultivation of row crops is possible within the Project right-of-way, cultivation of trees is not and the entire right-of-way through any tree farms would need to be kept clear of tall vegetation. Construction of the Longhorn Variation would disturb approximately 32 more acres of irrigated agriculture than the Proposed Action, but would avoid tree farms in the area. The Longhorn Variation avoids irrigated agriculture acres that would be affected by the Longhorn Alternative by routing the transmission line from the Longhorn Substation south along the East side of Bombing Range Road near the eastern border of the NWSTF Boardman to its intersection with the Proposed Action. One landowner along the Longhorn Alternative self-reported a dairy farm between MPs 8 and 9. The Longhorn Variation would be farther away from the dairy.

Most of the cropland in Morrow and Umatilla counties located within the analysis area is sprayed annually with an estimated 60 percent of the spraying done by air and 40 percent by ground. Over 90 percent of the aerial spraying is performed with a fixed-wing aircraft with the remainder by helicopter.

The Longhorn Alternative and Longhorn Variation would affect less prime farmland than the Proposed Action. Construction of the Proposed Action would disturb approximately 579 acres of prime farmland. Construction of the Longhorn Alternative would disturb 174 acres of prime farmland, and construction of the Longhorn Variation would disturb 263 acres of prime farmland. These alternatives would also have lower long-term operations effects on prime farmland, approximately 50 acres less than the Proposed Action.

The effects to agricultural operations during construction of all of the alternatives would be moderate, in that they would temporarily disrupt agricultural operations in the vicinity of construction activities. Long-term effects to agricultural operations created by Project operations would be low in the context of the scale of agricultural activity in the Morrow-Umatilla segment of the project, except for the Longhorn Alternative where long-term effects would remain moderate due to the long-term removal of tree crops from the right-of-way.

Existing Rights-of-Way

Neither the Horn Butte or Longhorn Alternatives would be located within a designated utility corridor, nor would they follow existing utility right-of-ways. The Proposed Action parallels a portion of an existing utility right-of-way between the Grassland Substation and the Proposed Horn Butte Substation. The Longhorn Variation parallels an existing transmission line right-of-way for most of its length and offers greater alignment with existing rights-of-way than the Proposed Action.

Timber Management

The alternatives in Segment 1 would have no effects to timber management. Effects to tree farm crops are discussed under Agriculture.

Fire Management

Fire management effects of the Proposed Action and the alternatives would be similar and were described under Effects Common to All Alternatives.

Conformance with Federal Land Use Plans

There are no BLM or USFS lands in the analysis areas of the Proposed Action or alternatives in Segment 1. Both the Longhorn Alternative and the Longhorn Variation would cross Reclamation land and the right-of-way for the Longhorn Variation would cross approximately 5.5 acres of lands managed by the U.S. Navy. Authorizations from Reclamation and the U.S. Navy would need to be in conformance with the applicable plans and regulations of those agencies.

Segment 2—Blue Mountains

Approximately 83 percent of the land in the analysis area in Segment 2 is private. Approximately 15 percent of the land in the analysis area is within the Wallowa-Whitman National Forest, with the remaining approximately 2 percent managed by the BLM. In Segment 2, there is one alternative to the Proposed Action, the Glass Hill Alternative.

Land Use

Construction of the Glass Hill Alternative would affect 19 more acres of private property, and 0.5 fewer acres of BLM lands than the Proposed Action. Operations would affect fewer acres than would construction, but the private and public ownership proportions would remain the same.

Effects to private property in Segment 2 would be low in the context of overall area land uses, but would be moderate to high to the landowners affected. As with the Proposed Action, effects on property values is a damage-related issue that would be negotiated between the landowner and IPC during the land title or easement acquisition process. Any land valuation or easement negotiations on private property would not involve the BLM or other land managing agencies.

Agriculture

Construction of the Glass Hill Alternative would affect approximately 14 more acres of prime farmland than the Proposed Action. The operations effects of the Glass Hill Alternative to prime farmlands would be long-term but have a low effect.

Designated Corridors and Existing Rights of Way

The Glass Hill Alternative would not be located within a designated utility corridor, nor would it follow existing utility right-of-ways. The Glass Hill Alternative would have less coincidence with corridors than the Proposed Action in Segment 2.

Timber Management

The Glass Hill Alternative would affect more timbered acres than the Proposed Action, but effects to timber management would be comparable to the Proposed Action.

Fire Management

Fire management effects of the Proposed Action and the Glass Hill Alternative would be similar and are described under Effects Common to All Alternatives.

Conformance with Federal Land Use Plans

The Glass Hill Alternative would not require amendment of any federal land use plans.

Segment 3—Baker Valley

Approximately 72 percent of lands in the Proposed Action analysis area in Segment 3 are private. Approximately 24 percent are managed by the BLM and 4 percent are owned by the State of Oregon.

In Segment 3, there are three alternatives to the Proposed Action. They are the Flagstaff Alternative, the Burnt River Mountain Alternative and the Timber Canyon Alternative.

Land Use

Land uses in the analysis area for Segment 3 are predominantly agriculture on private lands. The federal lands within the analysis area are mostly open range and sagebrush. The Timber Canyon Alternative and Flagstaff Alternative in Segment 3 would be located more on private lands than the Proposed Action and would have greater construction effects to private property than the Proposed Action. The Timber Canyon Alternative would be located on 123 more acres of private property and 161 more acres of BLM-administered land. The Flagstaff Alternative would be located on 128 more acres of private property 24 more acres of BLM-administered land. The Burnt River Mountain Alternative would affect a similar amount of private property as the Proposed Action. Operations would affect fewer acres than would construction for these alternatives, but the private and public ownership proportions would remain the same.

Effects to private property from the alternatives would be low in the context of overall area land uses, but would be moderate to significant to the landowners affected. As with the Proposed Action, effects on property values is a damage-related issue that would be negotiated between the landowner and IPC during the land title or easement acquisition process. Any land valuation or easement negotiations on private property would not involve the BLM or other land managing agencies.

Agriculture

The Burnt River Mountain Alternative would affect 29 acres less of prime farmland than the Proposed Action. The Flagstaff and Timber Canyon Alternatives would affect a similar amount of prime farmland to the Proposed Action, but slightly less.

Construction of most of the alternatives would disturb approximately the same areas of grazing allotments as the Proposed Action except the Timber Canyon Alternative, which would disturb approximately 30 percent less grazing allotments. The Timber Canyon Alternative would remove approximately 31 acres from use in grazing allotments during operations, while the Proposed Action would remove approximately 60 acres from grazing uses.

Direct and indirect effects to agricultural operations during construction of all of the alternatives would be moderate, in that they could temporarily disrupt agricultural operations in the vicinity of construction activities. Direct effects would include the loss of existing agriculture. Long-term effects to agricultural operations created by Project operations would be low in the context of the scale of agricultural activity in the Baker Valley Segment.

Timber Management

Of the alternatives, only the Timber Canyon Alternative, which would affect approximately 360 more acres of USFS forested land than the Proposed Action, would have a different effect on timber management. The 360 acres of forest in the Wallowa-Whitman Forest Plan timber management areas removed from the timber base due to right-of-way clearing and maintenance would not be large enough to affect the programmed harvest level for the Wallowa-Whitman National Forest. As a result, long-term effects to timber management would be minimal for the Timber Canyon Alternative.

Effects to timber management from the alternatives would be comparable to the Proposed Action, except for the Timber Canyon Alternative, which would clear cut an additional 288 acres of forest and woodlands compared to the Proposed Action and would be a moderate effect for both short-term construction and long-term operations.

Fire Management

Fire management effects of most of the alternatives would be similar to those anticipated for the Proposed Action. The exception would be the Timber Canyon Alternative, where fire management effects would be more pronounced due to the larger areas of forest cover that would be affected and the resulting greater proximity of forested terrain. Fire management effects of selection of the Timber Canyon Alternative would be anticipated to have a moderate effect.

Designated Corridors and Existing Right-of-Way

The Baker RMP identifies utility corridors, portions of which are followed by the Proposed Action. These corridors are a minimum of 2,000 feet wide, 1,000 feet on each side of existing centerlines unless they are adjacent to exclusion or avoidance areas (exclusion areas are designated wilderness areas and wild river segments of the WSR, avoidance areas include wilderness study areas (WSAs), ACECs, and scenic and recreation river segments of the WSR).

The Flagstaff Alternative would not be located within a designated utility corridor, but would parallel existing 230-kV and 69-kV transmission line right-of-way. The Proposed Action is not within a designated utility corridor, nor does it parallel an existing utility right-of-way. The Flagstaff alternative would be more consistent with management objective than the Proposed Action because it parallels an existing corridor.

The Timber Canyon Alternative would not be located within a designated utility corridor, nor would it follow an existing utility right-of-way. A portion of the Proposed Action in Segment 3 is within the West-Wide Energy corridor from approximately MP 164 to MP 171. Selection of the Timber Canyon Alternative would not be consistent with the USFS Wallowa-Whitman National Forest LRMP to follow designated corridors or existing utility rights-of-way to the extent practical.

In the Durkee area, the Proposed Action is located within the West-Wide Energy corridor on BLM lands. The Burnt River Mountain Alternative, which avoids Greater Sage-Grouse priority habitat, parallels an existing utility right-of-way and the West-Wide Energy corridor for a distance comparable to the Proposed Action.

Conformance with Federal Land Use Plans

The Proposed Action would require amendments to federal land use plans to address visual resources. The visual resources impacts analysis is in Section 3.2.7. Potential land use plan amendments are discussed in Section 3.4.

Oregon Trail Area of Critical Environmental Concern

The analysis area includes the Oregon Trail ACEC, which is designated in the Baker RMP and Oregon Trail ACECs designated in the Southeastern Oregon RMP (Keeney Pass, Tub Mountain and Birch Creek) to facilitate the protection of historic values (Figure 3-35). The Oregon National Historic Trail Management Plan was completed in July of 1989. Portions of the Oregon Trail ACEC fall within the analysis area in Segment 3 of Baker Valley. The first ACEC is northeast of Baker City, west of the Proposed Action near MP 155 and east of the Flagstaff Alternative near MP 4.

This portion of the ACEC includes the National Historic Oregon Trail Interpretive Center. The second Oregon Trail ACEC (Straw Ranch 1) is southeast of Pleasant Valley on the south side of the Proposed Action near MP 169. The third ACEC (Powel Creek) is a few miles south of the community of Weatherby, approximately 0.2 mile east of the proposed 138/69-kV rebuild near MP 3.5 and is approximately 0.5 mile east of the Proposed Action near MP 189.8.

The Proposed Action would avoid direct effects to the ACECs, but would have indirect visual effects, as the project could be seen from the ACECs.

SEGMENT 4—BROGAN AREA

In Segment 4, approximately 65 percent of the Proposed Action analysis area is BLM-managed land, approximately 2 percent is Oregon State land and approximately 33 percent is private land. The two alternatives in Segment 4 are the Willow Creek Alternative and the Tub Mountain South Alternative.

Land Use

Two alternatives would have greater construction effects to private property than the Proposed Action the Tub Mountain South Alternative (116 fewer acres of private property and 113 more acres of BLM-administered land) and the Willow Creek Alternative (20 fewer acres of private property and 20 fewer acres of BLM-administered land) (Table 3-111). In addition, the Tub Mountain South Alternative and the Willow Creek Alternative would have 47 fewer acres of State land. Effects to private property from the alternatives would be low in the context of overall area land uses, but would be moderate to significant to the landowners affected. As with the Proposed Action, effects on property values is a damage-related issue that would be negotiated between the landowner and IPC during the land title or easement acquisition process. Any land valuation or easement negotiations on private property would not involve the BLM or other land managing agencies.

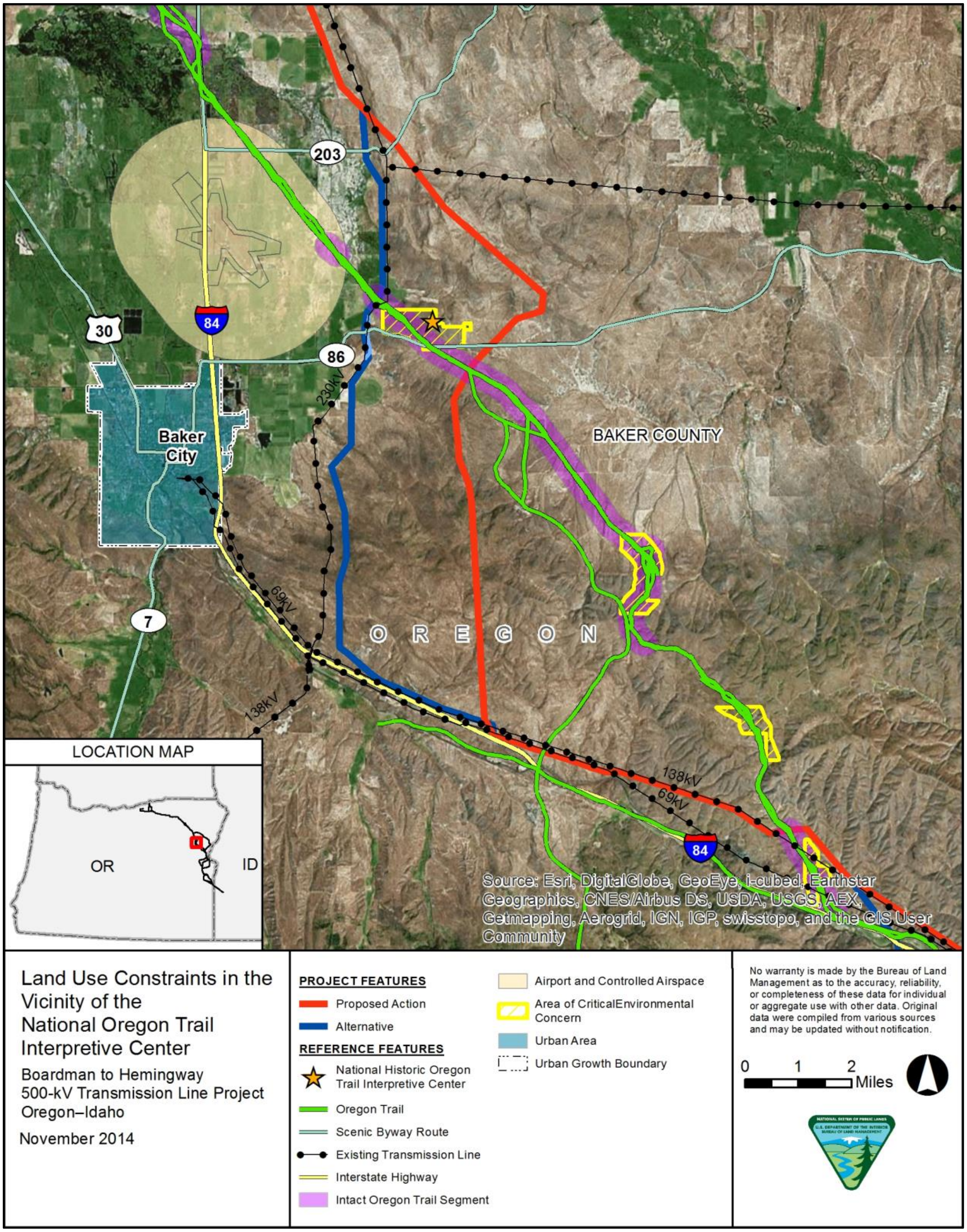


Figure 3-35. Land Use Constraints in the Vicinity of the National Oregon Trail Interpretive Center

Agriculture

Construction of the Willow Creek Alternative would affect 14 more acres of irrigated agriculture and 55 more acres of prime farmland than the Proposed Action. Construction of the Tub Mountain South Alternative would affect 114 more acres of prime farmland and 28 more acres of active agricultural operations than the Proposed Action.

Direct and indirect effects to agricultural operations during construction of all of the alternatives would be moderate, in that they could temporarily disrupt agricultural operations in the vicinity of construction activities. Long-term effects to agricultural operations created by Project operations would be low in the context of the scale of agricultural activity in the Brogan Area Segment of the B2H Project area.

Timber Management

Effects to timber management from the alternatives would be comparable to the Proposed Action.

Fire Management

Fire management effects from the Proposed Action and most of the alternatives would be similar and were described under Effects Common to All Alternatives.

Designated Corridors and Existing Right-of-Way

In the Brogan Area, the north section of the Tub Mountain South Alternative is within the WWE Corridor where it parallels I-84 for approximately 6 miles. The rest of the Tub Mountain South Alternative and the Willow Creek Alternative are not in and do not parallel a utility corridor. The Proposed Action is also not in or adjacent to a utility corridor.

Conformance with Federal Land Use Plans

The Tub Mountain South Alternative would avoid direct effects to the Oregon Trail ACEC, but would have indirect visual effects. The effects to visual resources are discussed in Section 3.2.7.

Segment 5—Malheur

In Segment 5, approximately 70 percent of the Proposed Action analysis area is located on BLM-managed lands. Approximately 28 percent is located on private lands and 2 percent on Reclamation lands. There are three alternatives to the Proposed Action in Segment 5; the Malheur S Alternative, the Malheur A Alternative and the Double Mountain Alternative (Table 3-111).

Land Use

All three alternatives in Segment 5 have greater distances on BLM and Reclamation lands and less distance through private property than the Proposed Action. Specific construction disturbance acreage numbers are: Malheur S Alternative (122 fewer acres of private property and 286 more acres of BLM-administered land); Malheur A Alternative (118 fewer acres of private property and 273 more acres of BLM-administered land); and the Double Mountain Alternative (69 fewer acres of private property and 110 more acres of BLM-administered land) (Table 3-111). The areas of long-term disturbance for

Project operations would be smaller than the areas disturbed for construction, but the relative private and public ownership proportions would be similar for these alternatives.

Effects to private property of the alternatives would be low in the context of overall area land uses, but would be moderate to significant to the landowners affected. As with the Proposed Action, effects on property values is a damage-related issue that would be negotiated between the landowner and IPC during the land title or easement acquisition process. Any land valuation or easement negotiations on private property would not involve the BLM or other land managing agencies.

Agriculture

Both the Malheur S and Malheur A Alternatives would have less effect on agricultural uses than the Proposed Action. Specifically, both alternatives would disturb approximately 39 fewer acres of irrigated agriculture and 70 fewer acres of prime farmland during construction. Operations disturbance would be lower than construction, but proportional among the Malheur S and Malheur A Alternatives and the Proposed Action.

Direct and indirect effects to agricultural operations during construction of all of the alternatives would be moderate. Direct effects would include the loss of existing agriculture. The alternatives could temporarily disrupt agricultural operations in the vicinity of construction activities. Long-term effects to agricultural operations created by B2H Project operations would be low in the context of the scale of agricultural activity in the Malheur Segment of the Project area.

Timber Management

Effects to timber management of the alternatives would be comparable to the Proposed Action.

Fire Management

Fire management effects of the Proposed Action and most of the alternatives would be similar and were described under Effects Common to All Alternatives.

Designated Corridors and Existing Right-of-Way

In the Owyhee area, the Proposed Action is within a BLM Vale District utility corridor from approximately MP 260 to MP 272. The Malheur S Alternative parallels the West-Wide Energy Corridor 11-228 for approximately 5 miles and is in the West-Wide Energy Corridor for approximately 8 miles. The Malheur A Alternative is in or parallels the West-Wide Energy Corridor for approximately 13 miles.

The existing PacifiCorp Summer Lake to Midpoint 500-kV transmission line forms the centerline for a 1,500-foot corridor that crosses the Owyhee River and the Owyhee River Below Dam ACEC.

Lands with Wilderness Characteristics

The Proposed Action would avoid direct impacts to the north boundary of the Double Mountain Unit. The width of the right-of-way would not extend into the Double Mountain Unit and all roads, towers and construction activities would be on the edge or outside of the unit boundary. The towers would be located a minimum of 125 feet outside the unit boundary. Short-term effects along the north edge of the unit from the project to opportunities for solitude and unconfined/ primitive recreation of the area would be visual, noise, dust, and vehicle emissions from construction activities and equipment, as well as potential restrictions on access to the inventoried area. Long-term effects from the project would be the influences of the project infrastructure, including the vertical prominence of transmission structures.

The Double Mountain Alternative would cross the north end of the Double Mountain wilderness characteristic inventory unit impacting 1,772 acres, causing that portion of the unit to no longer meet minimum wilderness criteria (Figure 3-34). The southern portion of the unit would still meet the 5,000 acre threshold but the north portion would be divided into two smaller portions that would not meet the size requirements. All roads and impacts would be required to stay in the right-of-way boundary. The proposed Double Mountain Alternative would become the new wilderness characteristic unit boundary on the north end of the unit. Short-term effects along the north edge of the unit would impact opportunities for solitude and unconfined/primitive recreation, visual, noise, dust, and vehicle emissions from construction activities and equipment, and potential restrictions on access to the inventoried area. Long-term effects from the project would be the influences of the project infrastructure, including the vertical prominence of transmission structures.

As mentioned above, the Vale District is under a court-approved settlement agreement that sets out certain requirements that BLM must follow until BLM completes an RMP amendment for the SEORMP (Settlement Agreement Between ONDA, Committee for the High Desert, WWP, and BLM (June 7, 2010). In particular, the settlement agreement precludes BLM from approving any surface-disturbing activity on lands that BLM has identified as having wilderness characteristics, if the BLM finds that the project would either diminish the size of the inventory unit or cause the entire inventory unit to no longer meet the criteria for wilderness character.

The Malheur S Alternative would avoid any direct impacts to the Double Mountain and Sourdough Wilderness Character Units (Figure 3-34). The width of the right-of-way would not extend into the Double Mountain Unit and all roads, towers and construction activities would be on the edge or outside of the unit boundary. Potential indirect effects from this alternative would be similar in type to those caused by the Proposed Action.

Wild and Scenic Rivers

The Southeastern Oregon RMP 2002 identifies the Owyhee River Below the Dam as suitable for Congressional designation as a Wild and Scenic River. This river is classified as recreational which includes rivers that are readily accessible by road or railroad, that may have some development along their shoreline, and that may have undergone some impoundment or diversion in the past. The outstandingly remarkable values of the river that make it eligible for Wild and Scenic River designation are scenery, recreation, fish, and wildlife. The RMP direction requires that the outstandingly remarkable values be protected pending a designation determination by Congress. The Proposed Action and alternatives would impact the outstanding remarkable value of scenery. Long-term effects would be the visual dominance of the transmission line structures crossing the Owyhee River. The impacts to visual resources are discussed in the Section 3.2.7.

Areas of Critical Environmental Concern

The analysis area for Segment 5 includes the Owyhee River Below the Dam ACEC, which is designated for scenic, special status plants and wildlife habitat. The relevant and important values of the ACEC include high scenic values of diverse landscape elements in a substantially natural setting, a special status species, the rare presence of a black cottonwood gallery in a riverine system, and the combined wildlife values of diverse habitat types supporting a large number of wildlife species and an important migratory corridor for neotropical birds (BLM 2002). The ACEC would be crossed by both the Malheur S and Malheur A Alternatives. These alternatives would impact the scenic relevant and important value for which the ACEC was designated. Long-term effects would be the visual dominance of the transmission line structures crossing the ACEC. The impacts to the visual resources are discussed in Section 3.2.7.

Segment 6—Treasure Valley

In Segment 6, approximately 81 percent of the analysis area is located on BLM-managed lands. Approximately 12 percent is on Idaho State lands, and 7 percent is on private lands. There are no alternatives to the Proposed Action in Segment 6. The Proposed Action is in or parallels the West-Wide Energy Corridor 11-228 from the Oregon-Idaho border to the Hemingway Substation, approximately 29 miles.

Table 3-111. Acres of Construction Disturbance by Land Ownership

Route Name	County	Acres by Ownership [1]					Total Acres
		BLM	Reclamation	Private	State	USFS	
Proposed Action Compared to Alternatives							
Proposed Action Compared to Horn Butte Alternative	Morrow	0.0	0.0	634.9	0.0	0.0	634.9
Horn Butte Alternative	Morrow	0.0	0.0	608.6	0.0	0.0	608.6
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	0.0	0.0	634.9	0.0	0.0	634.9
Longhorn Alternative	Morrow	0.3	0.0	485.7	0.0	0.0	486.0
Longhorn Variation	Morrow	0.0 BLM (5.9 DoD)	1.5	450.3	30.5	0.0	488.2
Proposed Action Compared to Glass Hill Alternative	Union	12.3	0.0	154.4	0.0	0.0	166.7
Glass Hill Alternative	Union	11.7	0.0	172.9	0.0	0.0	184.6
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	275.6	0.0	798.1	0.0	0.0	1,073.7
Timber Canyon Alternative	Union/Baker	114.2	0.0	920.6	0.0	335.9	1,370.7
Proposed Action Compared to Flagstaff Alternative	Baker	139.3	0.0	257.4	0.0	0.0	396.7
Flagstaff Alternative including 230-kV Rebuild	Baker	2.5	0.0	386.3	0.0	0.0	388.8
Proposed Action Compared to Burnt River Mountain Alternative	Baker	127.6	0.0	236.1	0.0	0.0	363.7
Burnt River Mountain Alternative	Baker	103.8	0.0	239.0	0.0	0.0	342.8
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	331.1	0.0	352.4	46.7	0.0	730.2
Tub Mountain South Alternative	Baker/Malheur	443.8	0.3	236.3	0.0	0.0	680.4

Route Name	County	Acres by Ownership [1]					Total Acres
		BLM	Reclamation	Private	State	USFS	
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	281.0	0.0	334.1	46.7	0.0	661.8
Willow Creek Alternative	Baker/Malheur	256.9	0.8	314.6	0.0	0.0	572.3
Proposed Action Compared to Malheur S Alternative	Malheur	514.0	7.4	189.0	0.0	0.0	710.4
Malheur S Alternative	Malheur	800.1	6.9	67.3	0.0	0.0	874.3
Proposed Action Compared to Malheur A Alternative	Malheur	514.0	7.4	189.0	0.0	0.0	710.4
Malheur A Alternative	Malheur	787.2	11.2	70.9	0.0	0.0	869.3
Proposed Action Compared to Double Mountain Alternative	Malheur	39.0	0.0	94.7	0.0	0.0	133.7
Double Mountain Alternative	Malheur	149.1	0.0	26.3	0.0	0.0	175.4

Table Note: [1] Merged Surface Management Agency data from Idaho and Oregon BLM.

1

Table 3-112. Acres of Construction Disturbance by Land Use Type

Route Name	Disturbance Acres by Land Use Type*									Total Acres
	County	Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub / Grass	Wetland	Woodland	
Proposed Action Compared to Alternatives										
Proposed Action Compared to Horn Butte Alternative	Morrow	367.8	0.0	11.1	0.0	0.9	254.7	0.4	0.1	635.0
Horn Butte Alternative	Morrow	360.8	0.0	7.4	0.0	0.2	239.8	0.4	0.0	608.6
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	367.8	0.0	11.1	0.0	0.9	254.7	0.4	0.1	635
Longhorn Alternative	Morrow	262.2	0.0	24.3	0.0	3.2	195.1	1.1	0.0	485.9
Longhorn Variation	Morrow	249.7	0.0	22.4	0.0	4.9	171.7	0.4	0.0	449.2
Proposed Action Compared to Glass Hill Alternative	Union	0.6	0.8	0.0	23.1	0.2	107.3	4.4	30.2	166.6
Glass Hill Alternative	Union	0.0	0.3	0.0	43.2	0.0	112.0	6.8	22.2	184.5
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	15.8	16.4	4.2	0.0	1.3	1028.4	1.3	6.5	1,073.9
Timber Canyon Alternative	Union/Baker	62.3	16.4	5.7	281.0	1.9	839.1	34.0	130.3	1,370.7
Proposed Action Compared to Flagstaff Alternative	Baker	7.6	0.0	2.2	0.0	0.2	381.6	0.2	5.0	396.8
Flagstaff Alternative including 230-kV Rebuild	Baker	34.5	0.0	3.1	0.0	0.2	338.3	7.4	5.3	388.8
Proposed Action Compared to Burnt River Mountain Alternative	Baker	9.9	2.2	0.4	0.0	0.5	348.3	1.3	1.1	363.7
Burnt River Mountain Alternative	Baker	19.9	2.1	1.5	0.0	0.5	299.0	5.1	14.8	342.9

Route Name	County	Disturbance Acres by Land Use Type*								Total Acres
		Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub / Grass	Wetland	Woodland	
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	35.4	13.0	2.9	0.0	1.9	675.4	1.6	0.1	730.3
Tub Mountain South Alternative	Baker/Malheur	64.9	0.0	9.8	0.0	1.7	602.5	1.5	0.0	680.4
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	35.4	8.9	2.9	0.0	1.9	611.8	0.9	0.1	661.9
Willow Creek Alternative	Baker/Malheur	47.4	0.0	9.5	0.0	1.8	512.0	1.6	0.0	572.3
Proposed Action Compared to Malheur S Alternative	Malheur	59.0	0.0	7.8	0.0	0.7	641.7	1.3	0.0	710.5
Malheur S Alternative	Malheur	0.7	5.6	1.1	0.0	1.4	864.6	0.9	0.0	874.3
Proposed Action Compared to Malheur A Alternative	Malheur	59.0	0.0	7.8	0.0	0.7	641.7	1.3	0.0	710.5
Malheur A Alternative	Malheur	0.7	2.6	1.1	0.0	1.9	862.2	0.8	0.0	869.3
Proposed Action Compared to Double Mountain Alternative	Malheur	0.0	0.0	0.0	0.0	0.1	133.4	0.2	0.0	133.7
Double Mountain Alternative	Malheur	0.0	0.0	0.0	0.0	0.1	175.4	0.0	0.0	175.5

Table Note: [1] ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land-use categories. See GIS documentation for crosswalk.

Table 3-113. Acres of Construction Disturbance by Agricultural Type

Route Name	County	Acres by Agriculture Type [1]				Total Agriculture Construction Acres
		CRP	Dryland Farming	Irrigated Agriculture	Pasture/Hay	
Proposed Action Compared to Alternatives						
Proposed Action Compared to Horn Butte Alternative	Morrow	10.8	300.4	90.4	0.3	401.9
Horn Butte Alternative	Morrow	10.8	306.1	70.5	0.3	387.7
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	10.8	300.4	90.4	0.3	401.9
Longhorn Alternative	Morrow	21.9	55.5	223.6	0.0	301.0
Longhorn Variation	Morrow	3.7	144.2	122.2	0.0	270.2
Proposed Action Compared to Glass Hill Alternative	Union	0.0	0.8	0.0	0.0	0.8
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	0.0	0.7	18.1	0.4	19.2
Timber Canyon Alternative	Union/Baker	0.0	16.9	50.4	1.6	68.9
Proposed Action Compared to Flagstaff Alternative	Baker	0.0	0.0	8.9	0.0	8.9
Flagstaff Alternative including 230kV Rebuild	Baker	0.0	0.0	38.9	0.0	38.9
Proposed Action Compared to Burnt River Mountain Alternative	Baker	0.0	2.5	9.4	0.5	12.4
Burnt River Mountain Alternative	Baker	0.0	0.0	18.5	1.7	20.2
Proposed Action Compared to Tub Mountain South Alternative	Baker/ Malheur	0.0	36.7	0.0	0.3	37.0
Tub Mountain South Alternative	Baker/ Malheur	0.0	54.9	0.0	10.1	65.0
Proposed Action Compared to Willow Creek Alternative	Baker/ Malheur	0.0	36.7	0.0	0.3	37.0
Willow Creek Alternative	Baker/ Malheur	0.0	25.1	13.8	8.5	47.4
Proposed Action Compared to Malheur S Alternative	Malheur	0.0	19.5	38.7	2.0	60.2
Malheur S Alternative	Malheur	0.0	0.8	0.1	0.0	0.9
Proposed Action Compared to Malheur A Alternative	Malheur	0.0	19.5	38.7	2.0	60.2
Malheur A Alternative	Malheur	0.0	0.8	0.1	0.0	0.9
Proposed Action Compared to Double Mountain Alternative	Malheur	0.0	0.2	0.0	0.0	0.2

Table Note: [1] ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories, then further classified into agriculture types (see GIS documentation).

Table 3-114. Miles of EFU Crossed by Proposed Action and Alternatives

Route Name	County	Miles of EFU Crossed
Proposed Action Compared to Alternatives		
Proposed Action Compared to Horn Butte Alternative	Morrow	33.9
Horn Butte Alternative	Morrow	27.3
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	33.9
Longhorn Alternative	Morrow	17.7
Longhorn Variation	Morrow	21.0
Proposed Action Compared to Glass Hill Alternative	Union	0.0
Glass Hill Alternative	Union	0.0
Proposed Action Compared to Timber Canyon Alternative	Baker	46.3
Timber Canyon Alternative	Union/Baker	29.2
Proposed Action Compared to Flagstaff Alternative	Baker	14.2
Flagstaff Alternative including 230kV Rebuild	Baker	15.1
Proposed Action Compared to Burnt River Mountain Alternative	Baker	16.8
Burnt River Mountain Alternative	Baker	16.8
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	6.9
Tub Mountain South Alternative	Baker/Malheur	8.2
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	5.9
Willow Creek Alternative	Baker/Malheur	4.7
Proposed Action Compared to Malheur S Alternative	Malheur	1.2
Malheur S Alternative	Malheur	0.0
Proposed Action Compared to Malheur A Alternative	Malheur	1.2
Malheur A Alternative	Malheur	0.0
Proposed Action Compared to Double Mountain Alternative	Malheur	0.0
Double Mountain Alternative	Malheur	0.0

Table 3-115. Acres of Construction Disturbance of Prime Farmland

Route Name	County	Acres of Prime Farmland [1]			Total Prime Farmland Construction Acres
		Farmland of Statewide Importance	Prime Farmland if Irrigated	Prime Farmland If Irrigated and Drained	
Proposed Action Compared to Alternatives					
Proposed Action Compared to Horn Butte Alternative	Morrow	262.4	316.5	0.0	578.9
Horn Butte Alternative	Morrow	283.0	269.6	0.0	552.6

Route Name	County	Acres of Prime Farmland [1]			Total Prime Farmland Construction Acres
		Farmland of Statewide Importance	Prime Farmland if Irrigated	Prime Farmland If Irrigated and Drained	
Proposed Action Compared to Longhorn Substation and Alternative	Morrow	262.4	316.5	0.0	578.9
Longhorn Alternative	Morrow	138.2	35.5	0.0	173.7
Longhorn Variation	Morrow	96.1	166.9	0.0	263.1
Proposed Action Compared to Glass Hill Alternative	Union	96.6	0.0	0.0	96.6
Glass Hill Alternative	Union	138.0	0.0	0.0	138.0
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	715.5	114.7	0.0	830.2
Timber Canyon Alternative	Union/Baker	662.2	58.0	5.4	725.6
Proposed Action Compared to Flagstaff Alternative	Baker	235.9	68.8	0.0	304.7
Flagstaff Alternative including 230kV Rebuild	Baker	219.1	86.0	0.0	305.1
Proposed Action Compared to Burnt River Mountain Alternative	Baker	306.9	7.5	0.0	314.4
Burnt River Mountain Alternative	Baker	212.0	6.2	14.7	232.9
Proposed Action Compared to Tub Mountain South Alternative	Baker/ Malheur	47.2	0.0	0.0	47.2
Tub Mountain South Alternative	Baker/ Malheur	84.8	76.7	0.0	161.5
Proposed Action Compared to Willow Creek Alternative	Baker/ Malheur	44.7	0.0	0.0	44.7
Willow Creek Alternative	Baker/ Malheur	52.6	47.4	0.0	100.0
Proposed Action Compared to Malheur S Alternative	Malheur	53.2	20.0	0.0	73.2
Malheur S Alternative	Malheur	0.1	0.0	0.0	0.1
Proposed Action Compared to Malheur A Alternative	Malheur	53.2	20.0	0.0	73.2
Malheur A Alternative	Malheur	0.1	0.0	0.0	0.1

Table Note: [1] SSURGO database soil data with farmland classifications supplemented with Wallowa-Whitman National Forest SRI survey with assumed farmland classifications based on adjacent surveys.

Table 3-116. Construction Disturbance Acres of BLM and USFS Grazing Allotments by County

Route Name	County	Construction Disturbance Acres of Grazing Allotments [1] on USFS- and BLM-managed Lands by Ownership [2]		Total Grazing Allotment Construction Acres
		BLM	USFS	
Proposed Action Compared to Alternatives				
Proposed Action Compared to Horn Butte Alternative	Morrow	N/A	N/A	N/A
Horn Butte Alternative	Morrow	N/A	N/A	N/A
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	N/A	N/A	N/A
Longhorn Alternative	Morrow	N/A	N/A	N/A
Longhorn Variation	Morrow	N/A	N/A	N/A
Proposed Action Compared to Glass Hill Alternative	Union	12.3	0.0	12.3
Glass Hill Alternative	Union	11.7	0.0	11.7
Proposed Action Compared to Timber Canyon Alternative	Union/Baker	273.5	0.0	273.5
Timber Canyon Alternative	Union/Baker	108.4	335.2	443.6
Proposed Action Compared to Flagstaff Alternative	Baker	138.7	0.0	138.7
Flagstaff Alternative including 230kV Rebuild	Baker	2.5	0.0	2.5
Proposed Action Compared to Burnt River Mountain Alternative	Baker	109.0	0.0	109.0
Burnt River Mountain Alternative	Baker	94.4	0.0	94.4
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	325.9	0.0	325.9
Tub Mountain South Alternative	Baker/Malheur	436.4	0.0	436.4
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	275.8	0.0	275.8
Willow Creek Alternative	Baker/Malheur	252.9	0.0	252.9
Proposed Action Compared to Malheur S Alternative	Malheur	494.6	0.0	494.6
Malheur S Alternative	Malheur	799.5	0.0	799.5
Proposed Action Compared to Malheur A Alternative	Malheur	494.6	0.0	494.6
Malheur A Alternative	Malheur	786.6	0.0	786.6
Proposed Action Compared to Double Mountain Alternative	Malheur	39.0	0.0	39.0
Double Mountain Alternative	Malheur	149.1	0.0	149.1

Table Notes: [1] For Idaho: boundaries of the livestock grazing pastures located within the Idaho BLM; allotment is comprised of at least one pasture. For Oregon: livestock grazing allotment and pasture boundaries with associated attributes describing some basic characteristics of the allotments and pastures. [2] Merged Surface Management Agency data from Idaho and Oregon BLM.

Table 3-117. Acres of Operations Disturbance by Land Ownership

Route Name	County	Disturbance Acres by Ownership [1]					Total Disturbed Acres
		BLM	Reclamation	Private	State	USFS	
Proposed Action Compared to Alternatives							
Proposed Action Compared to Horn Butte Alternative	Morrow	0.0	0.0	85.6	0.0	0.0	85.6
Horn Butte Alternative	Morrow	0.0	0.0	100.7	0.0	0.0	100.7
Proposed Action Compared to Longhorn Alternative	Morrow	0.0	0.0	85.6	0.0	0.0	85.6
Longhorn Alternative	Morrow	0.1	0.0	75.3	0.0	0.0	75.4
Longhorn Variation	Morrow	0.0 2.7 DoD	0.7	50.3	4.3	0.0	58.0
Proposed Action Compared to Glass Hill Alternative	Union	1.7	0.0	28.5	0.0	0.0	30.2
Glass Hill Alternative	Union	2.0	0.0	42.2	0.0	0.0	44.2
Proposed Action Compared to Timber Canyon Alternative	Baker	59.9	0.0	145.1	0.0	0.0	205.0
Timber Canyon Alternative	Union/Baker	33.0	0.0	198.2	0.0	61.7	292.9
Proposed Action Compared to Flagstaff Alternative	Baker	23.7	0.0	33.9	0.0	0.0	57.6
Flagstaff Alternative including 230kV Rebuild	Baker	0.7	0.0	56.8	0.0	0.0	57.5
Proposed Action Compared to Burnt River Mountain Alternative	Baker	31.9	0.0	55.3	0.0	0.0	87.2
Burnt River Mountain Alternative	Baker	23.8	0.0	44.3	0.0	0.0	68.1
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	71.6	0.0	79.9	10.0	0.0	161.5
Tub Mountain South Alternative	Baker/Malheur	78.9	0.2	27.5	0.0	0.0	106.6
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	60.4	0.0	76.9	10.0	0.0	147.3
Willow Creek Alternative	Baker/Malheur	43.7	0.4	54.7	0.0	0.0	98.8
Proposed Action Compared to Malheur S Alternative	Malheur	88.0	1.0	21.0	0.0	0.0	110

Table Note: [1] Merged Surface Management Agency data from BLM Idaho and Oregon.

Table 3-118. Acres of Operations Disturbance by Land Use Type

Route Name	County	Disturbance Acres by Land Use Type [1]								Total Acres
		Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub/ Grass	Wetland	Woodland	
Proposed to Alternative Route Comparisons										
Proposed Action Compared to Horn Butte Alternative	Morrow	50.3	0.0	1.7	0.0	0.5	33.0	0.0	0.0	85.5
Horn Butte Alternative	Morrow	54.8	0.0	1.7	0.0	0.1	44.1	0.0	0.0	100.7
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	50.3	0.0	1.7	0.0	0.5	33.0	0.0	0.0	85.5
Longhorn Alternative	Morrow	47.9	0.0	6.2	0.0	0.4	20.8	0.1	0.0	75.4
Longhorn Variation	Morrow	29.8	0.0	6.1	0.0	0.3	21.7	0.0	0.0	58.0
Proposed Action Compared to Glass Hill Alternative	Union	0.3	0.4	0.0	4.8	0.1	14.9	2.0	7.7	30.2
Glass Hill Alternative	Union	0.0	0.2	0.0	11.6	0.0	23.9	1.9	6.4	44.0
Proposed Action Compared to Timber Canyon Alternative	Baker	0.4	0.6	0.5	0.0	0.3	201.5	0.3	1.4	205.0
Timber Canyon Alternative	Union/Baker	5.5	0.4	0.4	50.8	0.7	199.2	9.0	26.8	292.8
Proposed Action Compared to Flagstaff Alternative	Baker	0.0	0.0	0.5	0.0	0.1	56.0	0.1	1.0	57.7
Flagstaff Alternative including 230-kV Rebuild	Baker	3.7	0.0	0.9	0.0	0.1	50.7	0.8	1.2	57.4
Proposed Action Compared to Burnt River Mountain Alternative	Baker	0.5	0.9	0.1	0.0	0.1	84.9	0.3	0.3	87.1
Burnt River Mountain Alternative	Baker	2.8	0.5	0.4	0.0	0.1	61.2	0.9	2.2	68.1
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	0.8	2.1	0.2	0.0	0.6	157.2	0.5	0.0	161.4
Tub Mountain South Alternative	Baker/Malheur	9.0	0.0	1.3	0.0	0.2	95.8	0.3	0.0	106.6

Route Name	County	Disturbance Acres by Land Use Type [1]								Total Acres
		Agriculture	Bare Ground	Developed	Forest	Open Water	Shrub/ Grass	Wetland	Woodland	
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	0.8	1.2	0.2	0.0	0.6	144.0	0.4	0.0	147.2
Willow Creek Alternative	Baker/Malheur	2.6	0.0	0.3	0.0	0.4	95.3	0.1	0.0	98.7
Proposed Action Compared to Malheur S Alternative	Malheur	1.9	0.0	0.6	0.0	0.3	106.9	0.2	0.0	109.9
Malheur S Alternative	Malheur	0.5	0.9	0.4	0.0	0.2	183.2	0.3	0.0	185.5
Proposed Action Compared to Malheur A Alternative	Malheur	1.9	0.0	0.6	0.0	0.3	106.9	0.2	0.0	109.9
Malheur A Alternative	Malheur	0.5	0.8	0.4	0.0	0.2	177.1	0.3	0.0	179.3
Proposed Action Compared to Double Mountain Alternative	Malheur	0.0	0.0	0.0	0.0	0.0	19.0	0.1	0.0	19.1
Double Mountain Alternative	Malheur	0.0	0.0	0.0	0.0	0.0	30.8	0.0	0.0	30.8

Table Note: [1] ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories (see GIS documentation).

1 **Table 3-119. Acres of Operations Disturbance by Agricultural Type**

Route Name	County	Disturbance Acres by Agriculture Type [1]				Total Agriculture Operation Acres
		CRP	Dryland Farming	Irrigated Agriculture	Pasture/ Hay	
Proposed Action to Alternatives						
Proposed Action Compared to Horn Butte Alternative	Morrow	2.7	41.0	11.7	0.0	55.4
Horn Butte Alternative	Morrow	2.7	45.5	12.8	0.0	61.0
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow	2.7	41.0	11.7	0.0	55.4
Longhorn Alternative	Morrow	4.5	14.0	36.0	0.0	54.5
Longhorn Variation	Morrow	0.6	14.6	16.4	0.0	31.6
Proposed Action Compared to Glass Hill Alternative	Union	0.0	0.4	0.0	0.0	0.4
Proposed Action Compared to Timber Canyon Alternative	Baker	0.0	0.0	0.6	0.2	0.8
Timber Canyon Alternative	Union/Baker	0.0	2.7	2.4	0.6	5.7
Proposed Action Compared to Flagstaff Alternative	Baker	0.0	0.0	0.0	0.0	0.0
Flagstaff Alternative including 230kV Rebuild	Baker	0.0	0.0	4.6	0.0	4.6
Proposed Action Compared to Burnt River Mountain Alternative	Baker	0.0	0.0	0.6	0.2	0.8
Burnt River Mountain Alternative	Baker	0.0	0.0	2.2	0.7	2.9
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	0.0	0.7	0.0	0.2	0.9
Tub Mountain South Alternative	Baker/Malheur	0.0	7.7	0.0	1.2	8.9
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	0.0	0.7	0.0	0.2	0.9
Willow Creek Alternative	Baker/Malheur	0.0	1.7	0.4	0.5	2.6
Proposed Action Compared to Malheur S Alternative	Malheur	0.0	0.6	0.9	0.7	2.2
Malheur S Alternative	Malheur	0.0	0.6	0.1	0.0	0.7
Proposed Action Compared to Malheur A Alternative	Malheur	0.0	0.6	0.9	0.7	2.2
Malheur A Alternative	Malheur	0.0	0.6	0.1	0.0	0.7
Proposed Action Compared to Double Mountain Alternative	Malheur	0.0	0.1	0.0	0.0	0.1

2 Table Note: [1] ReGAP (Regional Gap Analysis Program) data cross-walked (relabeled) to land use categories, then further
3 classified into agriculture types (see GIS documentation).

Table 3-120. Acres of Operations Disturbance of Prime Farmland

Route Name	County	Disturbance Acres of Prime Farmland [1]			Total Prime Farmland Operation Acres
		Farmland of Statewide Importance	Prime Farmland if Irrigated	Prime Farmland if Irrigated and Drained	
Proposed Action to Alternatives					
Proposed Action Compared to Horn Butte Alternative	Morrow	37.5	45.3	0.0	82.7
Horn Butte Alternative	Morrow	56.7	41.1	0.0	97.8
Proposed Action Compared to Longhorn Alternative	Morrow	37.5	45.3	0.0	82.8
Longhorn Alternative	Morrow	22.8	11.4	0.0	34.2
Longhorn Variation	Morrow	10.3	22.6	0.0	33.0
Proposed Action Compared to Glass Hill Alternative	Union	18.5	0.0	0.0	18.5
Glass Hill Alternative	Union	32.8	0.0	0.0	32.8
Proposed Action Compared to Timber Canyon Alternative	Baker	141.7	9.7	0.0	151.4
Timber Canyon Alternative	Union/ Baker	154.7	2.5	0.0	157.2
Proposed Action Compared to Flagstaff Alternative	Baker	35.1	8.0	0.0	43.1
Flagstaff Alternative including 230-kV Rebuild	Baker	33.2	8.0	0.0	41.2
Proposed Action Compared to Burnt River Mountain Alternative	Baker	73.8	2.2	0.0	76.0
Burnt River Mountain Alternative	Baker	43.7	2.1	0.8	46.6
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	16.2	0.0	0.0	16.2
Tub Mountain South Alternative	Baker/Malheur	10.6	6.3	0.0	16.9
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	16.1	0.0	0.0	16.1
Willow Creek Alternative	Baker/Malheur	9.4	2.4	0.0	11.8
Proposed Action Compared to Malheur S Alternative	Malheur	0.2	0.0	0.0	0.2
Malheur S Alternative	Malheur	0.1	0.0	0.0	0.1
Proposed Action Compared to Malheur A Alternative	Malheur	0.2	0.0	0.0	0.2
Malheur A Alternative	Malheur	0.1	0.0	0.0	0.1

Table Note: [1] SSURGO database soil data with farmland classifications supplemented with Wallowa-Whitman National Forest SRI survey with assumed farmland classifications based on adjacent surveys.

Table 3-121. Operation Disturbance Acres of BLM and USFS Grazing Allotments

Route Name	County	Operation Disturbance Acres of Grazing Allotments [1] on USFS- and BLM-managed Lands by Ownership [2]		Total Grazing Allotment Operation Acres
		BLM	USFS	
Proposed Action Compared to Alternatives				
Proposed Action Compared to Glass Hill Alternative	Union	1.7	0.0	1.7
Glass Hill Alternative	Union	2.0	0.0	2.0
Proposed Action Compared to Timber Canyon Alternative	Baker	59.2	0.0	59.2
Timber Canyon Alternative	Union/Baker	31.0	61.6	92.6
Proposed Action Compared to Flagstaff Alternative	Baker	23.6	0.0	23.6
Flagstaff Alternative including 230-kV Rebuild	Baker	0.7	0.0	0.7
Proposed Action Compared to Burnt River Mountain Alternative	Baker	28.7	0.0	28.7
Burnt River Mountain Alternative	Baker	21.6	0.0	21.6
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	70.1	0.0	70.1
Tub Mountain South Alternative	Baker/Malheur	77.8	0.0	77.8
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	58.9	0.0	58.9
Willow Creek Alternative	Baker/Malheur	43.4	0.0	43.4
Proposed Action Compared to Malheur S Alternative	Malheur	85.9	0.0	85.9
Malheur S Alternative	Malheur	173.1	0.0	173.1
Proposed Action Compared to Malheur A Alternative	Malheur	85.9	0.0	85.9
Malheur A Alternative	Malheur	166.7	0.0	166.7
Proposed Action Compared to Double Mountain Alternative	Malheur	2.5	0.0	2.5
Double Mountain Alternative	Malheur	26.1	0.0	26.1

Table Notes: [1] For Idaho: boundaries of the livestock grazing pastures located within the Idaho BLM; allotment is comprised of at least one pasture. For Oregon: livestock grazing allotment and pasture boundaries with associated attributes describing some basic characteristics of the allotments and pastures.[2] Merged Surface Management Agency data from Idaho and Oregon BLM.

3.2.6.7 Recreation Regulatory Framework

Bureau of Land Management

The BLM manages land uses on public lands, including recreational activities, through adoption and implementation of RMPs. The proposed B2H Project would be located on BLM-administered lands managed under three RMPs: the Baker and Southeastern Oregon RMPs in Oregon and the Owyhee RMP in Idaho.

Baker Resource Management Plan

The Baker RMP (BLM 1989) includes provisions to protect or enhance cultural resources, soil, water, botanical resources, visual resources, recreational opportunities, and other resources. OHV use is open on approximately 287,611 acres, limited on 138,042 acres, and closed on 4,101 acres of public lands. Nine areas totaling 38,988 acres are designated as ACECs, one area is designated as an outstanding natural area, and one as a research natural area. The management direction for recreation in the Baker RMP states:

> Provide or enhance recreational opportunities for hunting, fishing, swimming, floating, boating, hiking, and sightseeing. Implement and develop site specific management plans for Special Recreation Management Areas; and the Extensive Recreation Management Area that contains high recreational values. (BLM 1989:43)

The Baker RMP identifies Special Recreation Management Areas and Extensive Recreation Management Areas for priority recreation management, including:

- Special Recreation Management Areas (nationally identified areas)
  - Oregon Trail
  - Grande Ronde River
  - Powder River
- Extensive Recreation Management Areas (local/regional identified areas)
  - Spring Recreation Site
  - South Fork Walla-Walla Recreation Site
  - Bassar Diggins Recreation Site
  - Burnt River
  - Sheep Mountain
  - Homestead
  - Lookout Mountain
  - Virtue Flat
  - Denny Flat
  - Snake River Breaks
  - Brownlee Reservoir

The BLM is revising the RMP for the Baker Field Office management area. A Draft RMP/EIS was issued in October 2011 (BLM 2011b) and is available online. The draft RMP identifies six alternative management scenarios, and it is likely that management direction for recreational activities may change upon adoption of the revised RMP. Depending on the timing of the RMP revision, the regulatory framework for recreation as it relates to the proposed B2H Project may change.

Southeastern Oregon Resource Management Plan

The Southeastern Oregon RMP (BLM 2002) designates public recreational lands within the jurisdiction of the RMP into six Recreation Opportunity Spectrum (ROS) classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. The ROS is a recreation management tool developed by the USFS in the early 1980s to manage and administer natural settings for specific visitor experiences. The ROS management approach is also used by the BLM in some RMPs. The ROS class areas are mapped, and the ROS classes provide descriptions of the desired visitor recreational experience in the class area and a benchmark for analyzing the effects of the Proposed Action and alternatives on recreation. Additional information about ROS recreation management is provided in the discussion of the Wallowa-Whitman LRMP.

The Southeastern Oregon RMP established the Owyhee River Below the Dam special recreation management area (SRMA). Recreation values and use opportunities of the area include high-quality scenery, driving and walking/ hiking for pleasure, varied wildlife and historic resource viewing, photography, camping, hunting, fishing, and water play at the Snively Hot Springs Recreation Site.

Of the lands managed in the Southeastern Oregon RMP area, approximately 2,615,066 acres are open to OHV use, 2,004,396 acres are open to limited OHV use, and 15,826 acres are closed to OHV use.

Owyhee Resource Management Plan

The Owyhee RMP (BLM 1999) identifies seven objectives for recreation management, and accompanying management actions and allocations. The seven recreation objectives include:

- RECT-1—Provide for off-highway motor vehicle use on public lands while protecting sensitive resource values.
- RECT-2—Provide special management attention to areas of public land with identified special recreational, scenic, and cultural values where current and projected recreational demand warrants intensive management.
- RECT-3—Determine the suitability of all eligible rivers and streams for inclusion in the National Wild and Scenic Rivers System.
- RECT-4—Provide for high quality recreational opportunities and experiences at developed and undeveloped recreation sites by maintaining existing amenities (roaded natural, urban and semi-primitive motorized settings) and by providing new recreation sites for the public’s enjoyment, with emphasis on roaded natural and semi-primitive motorized settings.
- RECT-5—Develop a trail system that provides a range of motorized and non-motorized recreation opportunities for the public’s enjoyment of primitive, semi-primitive non-motorized, semi-primitive motorized, and roaded natural settings.

- RECT-6—Pursue increased public access opportunities in motorized and nonmotorized settings through the acquisition of fee titles or recreational easements (willing landowners only).
- RECT-7—Retain at least 10% of the Owyhee Resource Area in a primitive recreational opportunity spectrum setting.

The Owyhee RMP establishes guidance for managing a broad spectrum of OHV designations (192 acres are closed, 1,217,805 are limited, and 101,994 are open).

U. S. Forest Service

The USFS manages land uses, including recreational uses, on National Forest System lands through adoption and implementation of land and resource management plans (LRMPs). The Proposed Action and several alternatives would be located on lands managed under the Wallowa-Whitman LRMP.

Wallowa-Whitman National Forest Land and Resource Management Plan

The Wallowa-Whitman National Forest provides a wide variety of recreation activities, such as snowmobiling, skiing, hiking, horseback riding, and camping. The Wallowa-Whitman National Forest LRMP establishes forest-wide multiple-use goals and objectives and standards and guidelines and sets prescriptions, standards, and guidelines for each management area identified in the plan. The LRMP also establishes and maps five ROS classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural (USFS 1990).

Recreational Opportunity Spectrum

The ROS management approach is used by the USFS (and in some BLM plans) to provide a variety of opportunities for recreationists through the allocation and planning of recreational resources, inventory of recreational resources, estimation of the consequences of management decisions on recreational opportunities, and matching experiences recreationists desire with available opportunities (USFS 1979). The basic assumption underlying the ROS is that quality in outdoor recreation is best ensured through a diverse set of opportunities. The ROS consists of 7 major classes for recreation use: urban, rural, roaded natural, roaded modified, semi-primitive non motorized, semi-primitive motorized, and primitive. These classes are briefly described as follows (USFS 1979):

> Primitive—This class is an unmodified environment generally greater than 5,000 acres and generally located at least 3 miles from all roads and other motorized travel routes. A very low interaction between users (generally less than 3 group encounters per day) results in a very high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. The evidence of other users is low. Restrictions and controls are not evident after entering the land unit. Motorized use is rare.

> Semi-Primitive Non-Motorized—This class is a natural or natural-appearing environment generally greater than 2,500 acres and generally located at least 0.5 miles (greater or fewer depending on the terrain and vegetation but not less than 0.25 miles) but not farther than 3 miles from all roads and other motorized travel routes. The concentration of users is low

(generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. There is a minimum of subtle, on-site controls. No roads are present in the area.

Semi-Primitive Motorized—This class is a natural or natural-appearing environment generally greater than 2,500 acres and generally located within 0.5 miles of primitive roads and other motorized travel routes used by motor vehicles but not closer than 0.5 miles (greater or fewer depending on the terrain and vegetation but not less than 0.25 miles) from better-than-primitive roads and other motored travel routes. The concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature, and tranquility along with a high degree of self-reliance, challenge, and risk in using motorized equipment. Local roads may be present, or there may be extensive boat traffic along saltwater shorelines.

Roaded Natural—Resource modification and use are evident in this predominantly naturally appearing environment generally occurring within 0.5 miles (greater or fewer depending on terrain and vegetation but not less than 0.25 miles) from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites, with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance, with little opportunity for challenge and risk. Motorized use is allowed.

Roaded Modified—Vegetative and landform alterations typically dominate the landscape. There is little on-site control of users except for gated roads. There is moderate evidence of other users on roads (generally less than 20 group encounters per day) and little evidence of others or interactions at campsites. There is opportunity to get away from others but with easy access. Some self-reliance is required in building campsites and use of motorized equipment. A feeling of independence and freedom exists with little challenge and risk. Recreation users will likely encounter timber-management activities.

Rural—The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important as is convenience of facilities. There is little opportunity for challenge and risk, and self-reliance on outdoor skills is of little importance. Recreation facilities designed for group use are compatible. Users may have more than 20 group encounters per day.

Urban—This class is an urbanized environment with dominant structures, traffic lights, and paved streets. It may have natural appearing backdrop. Recreation places may be city parks and large resorts. Opportunity to observe and affiliate with other users is very important as is convenience of facilities and recreation opportunities. Interaction between large numbers of users is high. Outdoor skills, risk, and challenge are unimportant.

The Wallowa-Whitman National Forest LRMP identifies areas closed to motorized vehicle use. The USFS 2003 Forest Roads Analysis states that over 40 percent of the forest (949,000 acres) is closed to motorized use. The forest includes approximately 9,300 miles of road (7,000 miles of which are open for use), 2,900 miles of winter and summer trails, and 5 landing strips. Motor vehicle use is currently managed on the forest by a Forest Travel Management Plan (USFS 1991, as amended). It is composed of open roads, trails and areas. The USFS is in the process of preparing a revision to this Travel Management Plan.

BUREAU OF RECLAMATION

Reclamation's RMPs provide a guide for creating a balance for resource development, recreation, and protection of natural and cultural resources for the lands and waters they manage. Several alternatives would be located on lands managed under Reclamation's 1994 Owyhee Reservoir RMP.

OWYHEE RESERVOIR RESOURCE MANAGEMENT PLAN

The Owyhee Reservoir RMP (Reclamation 1994) defines the resource management activities and guidelines needed to preserve and protect the existing land and water resources administered by the Reclamation in the vicinity of the Owyhee Reservoir in Malheur County, Oregon. The RMP planning area includes approximately 26,190 acres of land and 12,740 acres of water surface (at full-pool elevation of 2,670 feet) comprising lands adjacent to the Owyhee Reservoir and parts of the Owyhee River system above and below the reservoir.

Recreation opportunities consist of land and water-based activities primarily during the summer. Land based recreation opportunities consist of hunting, camping, hiking, OHV use, wildlife observation, picnicking, and rockhounding. Water-based recreation opportunities include fishing, motorized and whitewater boating, windsurfing, and swimming.

The RMP was developed in cooperation with several other agencies to balance desired public recreational uses of the Reclamation lands and waters with the protection and improvement of existing resources specific to the Owyhee Reservoir study area. Land-use agreements have allowed for the establishment of the Owyhee State Park, the Lake Owyhee Resort, and the Pelican Point Airstrip along with other recreational activity sites within the RMP area.

The Proposed Action crosses 1.75 miles of Reclamation-managed lands in Malheur County, of which approximately 0.17 miles are within the Owyhee Reservoir RMP area. In addition, the Malheur A Alternative crosses 0.12 miles of Reclamation-managed land within the RMP area, and the Malheur S Alternative crosses less than a tenth of a mile (0.05 miles) within the RMP area.

STATE AND LOCAL GOVERNMENTS

While state and local governments frequently include recreation elements in their land-use plans, neither states nor local governments have regulatory authority over recreational land uses on public lands. A variety of permits, licenses and regulations do address recreational activities statewide, such as hunting, fishing, boats and recreational vehicles.

3.2.6.8 Recreation Issues Identified for Analysis

- Will there be economic effects on recreation and tourism?
- Would there be any effects on recreational facilities?
- Would any recreation activities change?
- Will there be economic impacts on the Baker City community and on the community's economic development potential as a premier outdoor recreation and tourism center?
- Will there be impacts on the Blue Mountain Heritage Trails network regional economic development initiative and on the Base Camp Baker branding and economic development program now under way?
- Will the project adversely affect the BLM National Historic Oregon Trail Interpretive Center?
- Would there be any changes in hunting and fishing activities?

3.2.6.9 Recreation Methodology

The analysis area for recreational uses extends 0.5 mile on each side of the Proposed Action and alternative centerlines and 50 feet on each side of new or existing roads. The analysis area includes sites for substations, communication sites, multiple-use areas, and fly yards.

Recreational resources were identified using readily available GIS data and other information about existing federal, state, county and local land uses. A GIS shape file was generated for the recreation analysis area using the centerlines and indicative design features of the Proposed Action and alternatives. The shape file was buffered in accordance with the analysis area to determine the potential affected area.

Figure 3-36, Figure 3-37, and Figure 3-38 show inventoried recreational areas in and near the recreation analysis area.

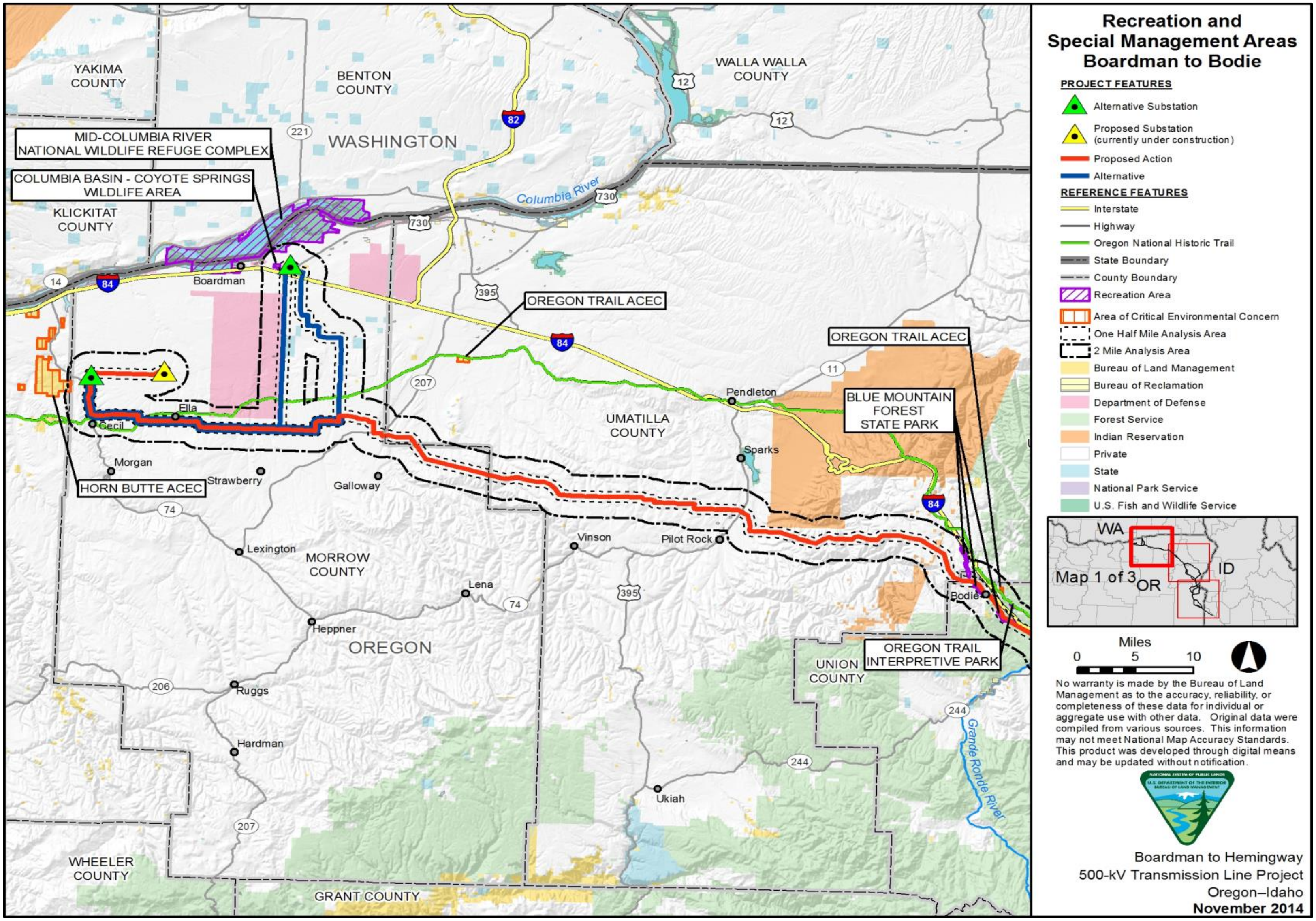


Figure 3-36. Recreation and Special Management Areas, Boardman to Bodie

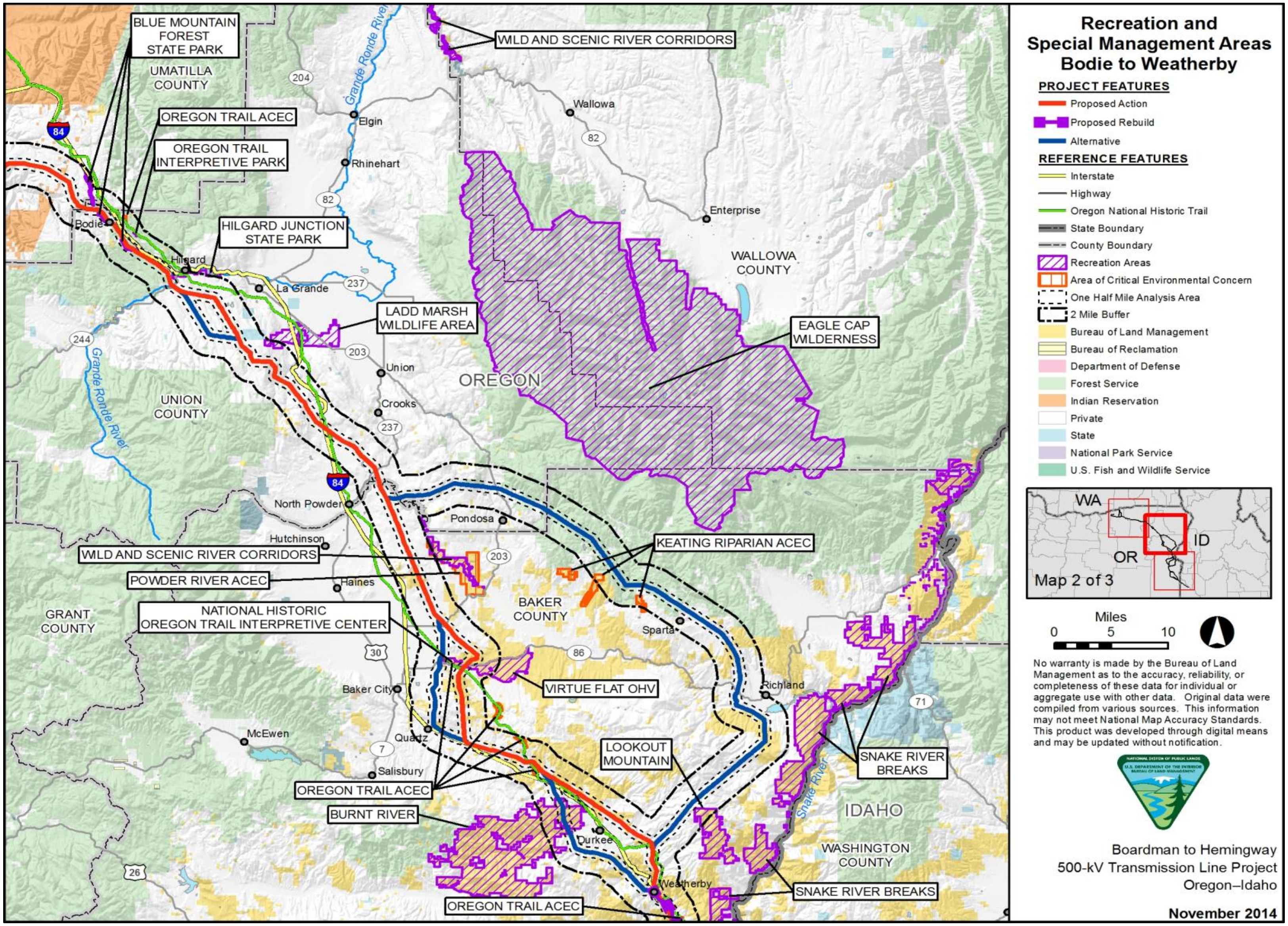
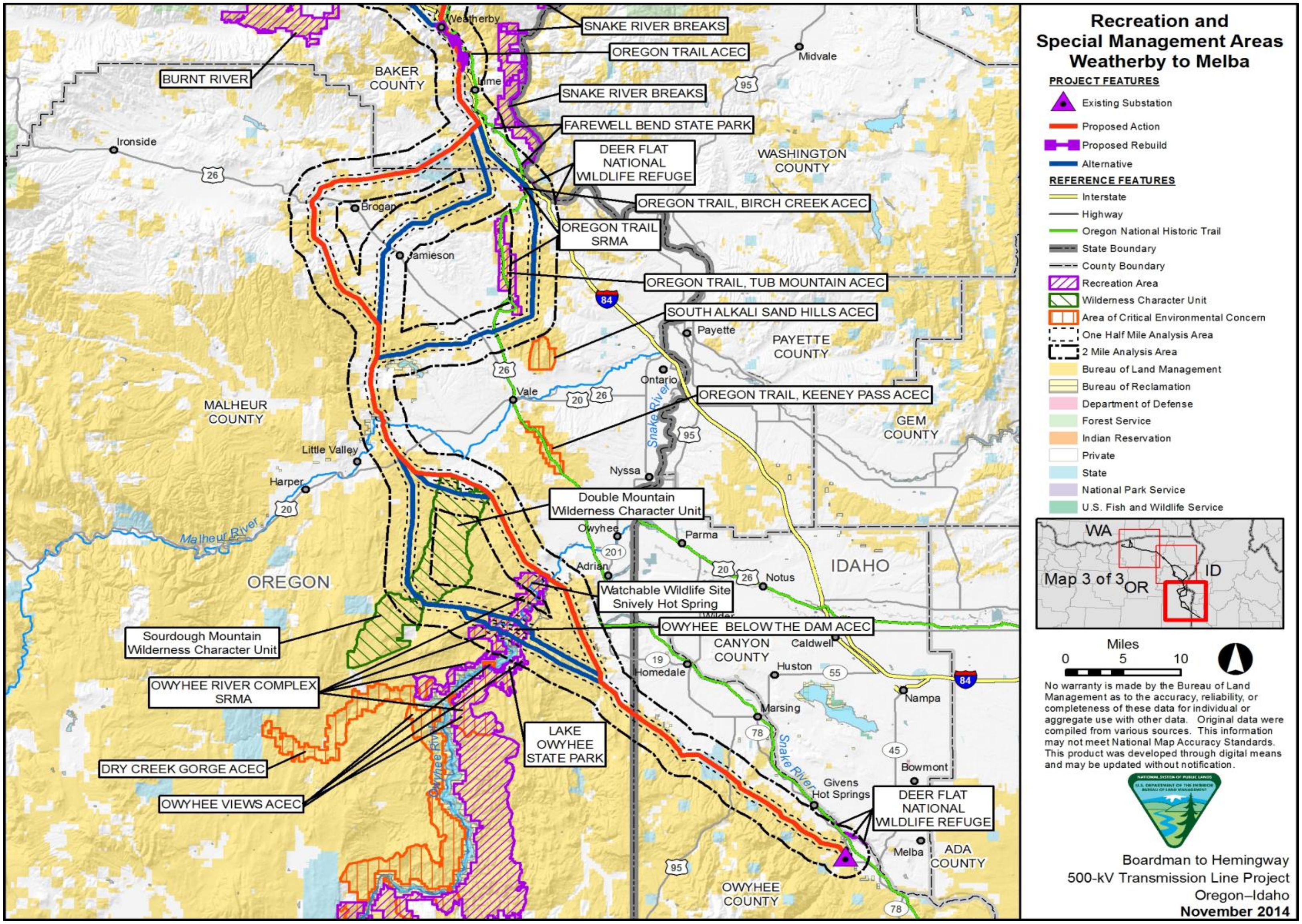


Figure 3-37. Recreation and Special Management Areas, Bodie to Weatherby

1


2
Figure 3-38. Recreation and Special Management Areas, Weatherby to Melba

3.2.6.10 Recreation Affected Environment

The affected environment for recreation is described for the entire B2H Project analysis area. Public lands in Oregon and Idaho receive considerable recreational use in the form of dispersed, unstructured activities in and outside designated-use areas, such as hiking, hunting, OHV use, and fishing. Generally, designated recreation areas include federal, state, or county parks and forests; conservation land; wildlife-habitat management areas; hunter management areas; natural landmarks; scenic byways; designated trails; OHV use restrictions or areas; recreational rivers; and campgrounds. Public lands provide a broad spectrum of outdoor recreational opportunities for visitors. Existing recreational resources in the vicinity of the Proposed Action include designated recreation management areas; developed recreation facilities, including parks and trail networks; dispersed recreation; and other sites with a recreation component. Designated recreational areas were avoided during the route selection studies whenever possible.

Federal Recreation Areas and Designations

Generally, designated recreation areas include federal, state, or county parks and forests; conservation lands; wildlife-habitat management areas; hunter management areas; natural landmarks; scenic byways; designated trails; OHV use areas; recreational rivers; and campgrounds. Designated recreation and public-interest areas within the B2H Project analysis area include an extensive recreation management area (ERMA); SRMAs; ACECs; OHV areas; historic trails; scenic byways; and developed recreation facilities.

BLM Recreation Areas

The BLM designates SRMAs and ERMAs in RMPs. Recreation area management plans are to be developed for each SRMA and ERMA in accordance with BLM Manual 8322, *Recreation Area Management Plans* (BLM 1981).

The analysis area includes the Virtue Flat ERMA, designated in the Baker RMP. The Virtue Flat Recreation Area Management Plan was completed in May of 2007. The Virtue Flat ERMA is managed for extensive OHV use. The Virtue Flat OHV area covers over 7 square miles (4,918 acres) of rolling hills with narrow draws. It is located along the south side of State Highway 86, east of the entrance road to the NHOTIC, for a distance of about 7 miles. The OHV trails and routes at this BLM facility are available year-round for all uses, including mountain bikes and horseback riding. The Proposed Action and analysis area cross the westernmost portion of the OHV area but should not directly affect its use. The analysis area also includes the Powder River ERMA/SRMA along the Timber Canyon Alternative.

The Proposed Action crosses the Owyhee River Below the Dam SRMA, which is designated as a SRMA in the Southeastern Oregon RMP. A recreation area management plan has not been developed for this SRMA. This SRMA is managed for high-quality scenery, driving and walking/hiking for pleasure, varied wildlife and historic resource viewing, photography, camping, hunting, fishing, and water play at the developed Snively Hot Springs recreation site and the Owyhee Below the Dam Watchable Wildlife Area (BLM 2002).

Reclamation Recreation Areas

The key features of the Owyhee Dam Project are the Owyhee Dam on the Owyhee River about 11 miles southwest of Adrian, Oregon, and the Owyhee Reservoir, a long, narrow reservoir with about 150 miles of shoreline, which experiences heavy recreational use. Lands around the reservoir are mostly public lands under the control of Reclamation. The reservoir contains 4 boat ramps, provides excellent waterfowl hunting, and the surrounding hills and canyons offer many opportunities for the pursuit of upland game birds (Reclamation 2009).

Historic Trails

The B2H Project analysis area contains national historic trails and their variants, other historic trails, and associated resources. Many of the routes manifest the westward migration that dominated the mid-nineteenth century, while other historic routes document the evolution of these routes from Indian trails (and their variants) to other forms of transportation, including wagon and automobile roads. Across the project area there is only one designated National Historic Trail. The Oregon Trail was designated as the Oregon National Historic Trail by the National Park Service. Other historic properties (e.g., ranches, homesteads, mines) for which integrity of setting are an integral element of their eligibility for the National Register of Historic Places are in the viewshed of the Proposed Action or alternatives.

Segments of the following historic trails fall within the B2H Project analysis area, but may not be designated as a National Historic Trail:

- Hunt and Stuart Trail 1811–1812
- Keating Wagon Road
- Meek Cutoff
- Oregon National Historic Trail and the Oregon Trail South Alternate
- Ontario to Burns Freight Road
- Dalles Military Road
- Trail of the forced march of the Shoshone-Paiute peoples from near Weiser, Idaho to Ft. Simcoe, Washington

Additional information on B2H Project effects to historic trails is found in Section 3.2.9, National Historic Trails.

Scenic Roads

There are a number of scenic roads within the B2H Project analysis area. The scenic roads include scenic byways, backcountry byways, and a scenic tour route. The roads have been designated by federal or state agencies and are generally roads that have historic, recreational, scenic, or other qualities that make them attractive for recreationists and others interested in driving for pleasure.

Table 3-122 lists scenic byways potentially affected by Proposed Action and alternative crossings. The locations of scenic byways and descriptions of visual effects are discussed in Section 3.2.7, Visual Resources.

Table 3-122. Scenic Byways Crossed by Proposed Action and Alternatives

Route Name	County	Management Agency [1]	Byway Designation	Byway Name [2]	Closest MP
Proposed Action	Morrow	Private	USFS, state	Blue Mountain Scenic Byway	8.4 and 10.8
Proposed Action	Union	Private	State	Grande Tour Route	134.6
Proposed Action	Baker	BLM	BLM	Snake River-Mormon Basin Back Country Byway	156.2
Proposed Action	Baker	BLM	NSB, state, USFS	Hells Canyon Scenic Byway	156.2
Proposed Action	Baker	Private	BLM	Snake River-Mormon Basin Back Country Byway	192.3
Proposed Action	Baker	Private	State	Grande Tour Route	150.7
Proposed Action	Malheur	N/A	N/A	N/A	N/A
Proposed Action	Owyhee	N/A	N/A	N/A	N/A
Proposed 138/69-kV Rebuild	Baker	Private	BLM	Snake River-Mormon Basin Back Country Byway	4.6
Proposed Action and Alternative Comparisons					
Proposed Action Compared to Horn Butte Alternative	Morrow	Private	USFS, state	Blue Mountain Scenic Byway	8.4 and 10.8
Horn Butte Alternative	Morrow	Private	USFS, state	Blue Mountain Scenic Byway	8.4 and 10.8
Proposed Action Compared to Longhorn Alternative	Morrow	Private	USFS, state	Blue Mountain Scenic Byway	8.4 and 10.8
Longhorn Alternative, Longhorn Variation	Morrow	Private	USFS, state	Blue Mountain Scenic Byway	??
Proposed Action Compared to Glass Hill Alternative	Union	N/A	N/A	N/A	N/A
Glass Hill Alternative	Union	N/A	N/A	N/A	N/A
Proposed Action Compared to Timber Canyon Alternative	Baker	BLM	BLM	Snake River-Mormon Basin Back Country Byway	156.2
Proposed Action Compared to Timber Canyon Alternative	Baker	BLM	NSB, state, USFS	Hells Canyon Scenic Byway	156.2

Route Name	County	Management Agency [1]	Byway Designation	Byway Name [2]	Closest MP
Proposed Action Compared to Timber Canyon Alternative	Baker	Private	State	Grande Tour Route	150.7
Timber Canyon Alternative	Union/Baker	Private	BLM	Snake River-Mormon Basin Back Country Byway	40.8
Timber Canyon Alternative	Union/Baker	Private	NSB, state, USFS	Hells Canyon Scenic Byway	40.8
Timber Canyon Alternative	Union/Baker	Private	State	Grande Tour Route	10.1
Proposed Action Compared to Flagstaff Alternative	Baker	BLM	BLM	Snake River-Mormon Basin Back Country Byway	156.2
Proposed Action Compared to Flagstaff Alternative	Baker	BLM	NSB, state, USFS	Hells Canyon Scenic Byway	156.2
Proposed Action Compared to Flagstaff Alternative	Baker	Private	State	Grande Tour Route	150.7
Flagstaff Alternative including 230-kV Rebuild	Baker	Private	BLM	Snake River-Mormon Basin Back Country Byway	0.3
Flagstaff Alternative including 230-kV Rebuild	Baker	Private	BLM	Snake River-Mormon Basin Back Country Byway	4.5
Flagstaff Alternative including 230-kV Rebuild	Baker	Private	NSB, state, USFS	Hells Canyon Scenic Byway	0.3 and 4.5
Flagstaff Alternative including 230-kV Rebuild	Baker	Private	State	Grande Tour Route	0.8
Proposed Action Compared to Burnt River Mountain Alternative	Malheur	N/A	N/A	N/A	N/A
Burnt River Mountain Alternative	Malheur	N/A	N/A	N/A	N/A
Proposed Action Compared to Tub Mountain South Alternative	Malheur	N/A	N/A	N/A	N/A
Tub Mountain South Alternative	Malheur	N/A	N/A	N/A	N/A
Proposed Action Compared to Willow Creek Alternative	Malheur	N/A	N/A	N/A	N/A
Willow Creek Alternative	Malheur	N/A	N/A	N/A	N/A
Proposed Action Compared to Malheur S Alternative	Malheur	N/A	N/A	N/A	N/A

Route Name	County	Management Agency [1]	Byway Designation	Byway Name [2]	Closest MP
Malheur S Alternative	Malheur	N/A	N/A	N/A	N/A
Proposed Action Comparedto Malheur A Alternative	Malheur	N/A	N/A	N/A	N/A
Malheur A Alternative	Malheur	N/A	N/A	N/A	N/A
Proposed Action Compared to Double Mountain Alternative	Malheur	N/A	N/A	N/A	N/A
Double Mountain Alternative	Malheur	N/A	N/A	N/A	N/A

Table Notes: [1] Merged Surface Management Agency data from BLM Idaho and Oregon. [2] Scenic byways compiled from http://www.fhwa.dot.gov/byways/.

OHV Use on Public Lands

The non-highway road networks within the analysis area comprise a series of county roads, BLM- and USFS-maintained roads, private (ungated) roads, 2-track routes, and snowmobile trails. The BLM categorizes travel routes on public lands in three categories:

- Road – A linear route declared a road by the owner, managed for low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.
- Primitive Road – A linear route managed for use by four-wheel-drive or high clearance vehicles. Primitive roads do not normally meet any BLM road design standards.
- Trail – A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation, or for historical or heritage values. Trails are generally not managed for use by four-wheel-drive or high clearance vehicles.

These travel routes are used for both recreational and non-recreational purposes.

Typical recreational OHV activities within the analysis area include trail competitions, recreational all-terrain vehicle and motorcycle trail riding, and snowmobiling. OHV use in itself has become a popular method for exploring public lands.

Non-recreational OHV use includes energy development, and land management activities. OHVs are also used for the noncommercial collection of decorative rock and native plant materials. Employees of government agencies, ranchers, timber companies, energy companies, and utility providers are permitted users who use OHVs to access and maintain the infrastructure required for the continued operation and maintenance of their facilities. OHVs are used for range inspections, vegetation treatments, surveying and mapping, inventories, monitoring, fire suppression, project construction, and maintenance.

The OHV designations for BLM-managed lands are open, closed, or limited to designated travel routes by season or type of use. Similarly the National Forest System lands managed by under the 1990

Wallowa-Whitman LRMP are designated as either open, closed or limited use (by motor vehicle type, or season of use).

Reclamation's Owyhee Reservoir RMP restricts motor-vehicle access to designated roads, parking areas, campgrounds, and other specific recreation areas (Reclamation 1994: Figure 6-1). GIS data were not obtained for OHV use on Reclamation-managed lands, but it appears the Proposed Action and alternatives would not cross Reclamation-managed lands in areas closed to motorized travel.

Travel by snowmobiles is permitted in designated areas on BLM-managed and National Forest System lands (unless otherwise specifically limited or closed to snowmobiles) if they are operated in a responsible manner without damaging the vegetation or harming wildlife.

BLM- and USFS-Designated Recreation Opportunity Spectrum Areas

ROS designations are used in the BLM Owyhee and Southeastern Oregon RMPs and the Wallowa-Whitman National Forest LRMP to identify the level of a natural-appearing landscape, level of motorized use, and development level of structures that a recreationalist would expect to encounter on federal lands. Roads and other developments would not be consistent with the primitive and semi-primitive non-motorized ROS designations. Developments may be evident but should be natural-appearing in areas designated as semi primitive motorized. Roads and other motor-vehicle developments are permitted when consistent with the recreation experience expected in areas designated as roaded natural, roaded natural modified, and rural. Developments may dominate the view in areas classified as roaded natural, natural modified, and rural. They may be noticeable in semi-primitive motorized areas but should not dominate. Developments are not appropriate in areas classified as semi primitive non-motorized and primitive.

State, County, and Private Recreation Areas

Oregon State Parks

Portions of the Blue Mountain Forest State Park and the western end of the Hilgard Junction State Park lie within the analysis area. Blue Mountain Forest State Park comprises six separate parcels along I-84, the Old Oregon Trail Highway. These parcels extend from Deadman's Pass Rest Area in Umatilla County south to Spring Creek in Union County. The corridor protects one of the few examples of undisturbed, mature evergreen forests along I-84 and is composed of intermittent stands of old-growth ponderosa pine (*Pinus ponderosa*), western larch (*Larix occidentalis*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), and grand fir (*Abies grandis*) (OPRD 2011a).

Hilgard Junction State Park, located 8 miles west of La Grande at the intersection of I-84 and Highway 244 near the Grande Ronde River, offers daytime activities, wildlife viewing, and 17 recreational vehicle camping or tent camping sites along the Grande Ronde River (OPRD 2011b).

Oregon Wildlife Management Area

Ladd Marsh Wildlife Management Area (WMA) was established in 1949 with the primary objectives of protecting and improving waterfowl habitat and providing a public hunting area (Oregon Department of

Fish and Wildlife (ODFW) 2008). The WMA is located in southern Union County 6 miles southeast of La Grande, and the western end is within the project analysis area. The WMA is managed by the ODFW in accordance with the *Ladd Marsh Wildlife Management Area Management Plan* (ODFW 2008). This WMA is designated as a protected area in accordance with EFSC guidelines.

DISPERSED RECREATION

Public lands provide a broad spectrum of outdoor opportunities that afford visitors the freedom of recreational choice, self-discovery and challenge. Public lands in Oregon and Idaho receive considerable recreational use in the form of dispersed, unstructured activities outside designated-use areas. Dispersed recreational activities are activities that occur on public lands but are not located at developed sites or locations. These dispersed activities include OHV use, camping, hunting, fishing, touring historic trails, sightseeing, pleasure driving, rock hounding, photography, picnicking, hiking, mountain biking, snowmobiling, rafting, power boating, and general water play. This wide range of activities is possible because land within the analysis area is generally accessible and offers a variety of settings suitable for different recreational activities.

Hunting in the analysis area varies by season and location. Small and large game hunting occurs at different times throughout the year as permitted by the ODFW and Idaho Department of Fish and Game (IDFG). All recreational uses in the B2H Project area are variable in terms of season of use or location.

3.2.6.11 ENVIRONMENTAL CONSEQUENCES—RECREATION

EFFECT INTENSITY CRITERIA

Effects to recreation are described as high, moderate or low, depending on duration and intensity of the effects (Table 3-123).

Table 3-123. Recreation Effects Intensity Criteria

Intensity of Impacts	Description
High	• Areas of high intensity of impact where the project would create a direct long-term conflict with existing recreational uses. • Areas where the project would conflict physically with any designated recreation, preservation use area, inventoried area with wilderness characteristics, and unroaded/undeveloped areas in a manner that would reduce the size of the area such that it may not be able to be managed as such. • Areas where the project would conflict with any applicable adopted policy or management goal of the affected land-management agency.
Moderate	• Areas of moderate intensity of impact where the project would have a long-term effect on recreational uses. • Areas where the project would require establishment of a right-of-way in a designated recreation area.
Low	• Areas of low intensity of impact where recreational use is compatible with a transmission line. • Areas in which the effects, while long-term, would not preclude use of the area for recreational uses. • Areas in which effects would be temporary and reversible after construction is concluded.

Design Features

Measures (Design Features) that would be employed to reduce impacts to recreation users during construction activities would include:

- USFS legal closure orders on temporary roads used during construction.
- IPC posting of project roads as closed to recreational access.
- IPC posting of planned construction dates and project area activities at major access points to notify recreational users of upcoming activities and allow them to revise their plans.

No Action Alternative

If the No Action Alternative is selected, land uses in the project area would continue unaffected by the B2H Project. Changes in land use are expected over time, but none would be created by the proposed B2H Project. In addition, no effects to recreation sites, recreation resources, roads, traffic, or other elements of the local transportation system would occur if the right-of-way grant were denied for the proposed B2H Project.

Effects Common to All Alternatives

Effects to recreation are described for all alternatives over the entire B2H Project area.

Recreation and Public-Interest Areas

Recreation and public interest areas in the vicinity of the Proposed Action and alternatives are shown in Figure 3-36, Figure 3-37, and Figure 3-38. Construction disturbance in these areas would include construction of new roads, improvements to existing roads, and construction of fly yards, pulling/tensioning areas, communication sites, staging areas and substations. Construction would likely not have high long-term impacts on recreational resources and other public-interest areas, as the Proposed Action and alternatives were designed to avoid such areas during the siting process. Direct effects within the 250-foot right of way and indirect effects within the analysis area would be short-term (during the construction period) and limited to those times when construction would occur in the immediate vicinity of specific recreation areas.

There could be some overlap between construction activities and hunting seasons. There could be localized and temporary short-term disruptions to hunting in the area. Access to recreation areas could be temporarily and intermittently affected by construction activities. Construction could result in intermittent access delays during construction. There could be temporary traffic impacts during construction. Because construction effects would be temporary and limited in a real extent, B2H project construction is anticipated to have moderate overall effects on recreational visitor experiences in the analysis area.

The presence of transmission towers and lines would cause minimal disruption to ongoing recreational activities in designated recreation areas. Project-related visual impacts that would be experienced by recreationists are described below and are further described in the Chapter 3 Visual Resources section. Routine and emergency maintenance activities within the right-of-way, including access to transmission structures and lines by maintenance vehicles on local roads and access roads, could temporarily disrupt recreational activities in the immediate vicinity causing low to moderate effects. Direct and indirect effects to recreation caused by operations of the Proposed Action are anticipated to be long-term.

OHV Use

In Oregon, the Proposed Action would cross approximately 14 miles of Baker RMP-designated OHV limited areas (OHVs are limited to designated routes) from milepost 260 near Adrian, Oregon to the Oregon/Idaho state line, pursuant to the Southeastern Oregon RMP. The OHV limited designation is intended to protect resource values outside existing travel routes. There are no spatial data to support detailed analysis for OHV designations in the Baker RMP planning area, but based on Map 5 of the Baker RMP (BLM 1989), portions of the Lookout Mountain/Soda Lake, Virtue Flat, and South Virtue Flat OHV areas near Baker appear to lie within the B2H Project analysis area. In Idaho, the Proposed Action would cross approximately 19 miles of area designated for OHV use by the BLM Idaho State Office between the Oregon/Idaho state line and the Hemingway substation. Construction activities could affect OHV use in designated areas, but disturbance would be temporary and limited to the areas of construction activity, and would therefore be moderate.

The Proposed Action would also cross 1.5 miles of National Forest System lands designated as closed to OHV use in the Blue Mountain Oregon Trail/Spring Creek area of the Wallowa-Whitman LRMP. The construction of the B2H Project would create additional access routes, which may facilitate OHV use in areas currently designated as closed to OHVs or where OHV use is limited, and could therefore result in resource damage. In addition, where the route or new access road crosses trails not designated as open to OHV use, the project may lead to unauthorized use of these trails by OHVs. Some unauthorized OHV use may occur during construction when workers are not on-site (such as weekends or between the time a section is completed but not activated), but the majority of unauthorized use is likely to occur after construction is completed. Unauthorized OHV use is discussed in more detail under the Operations section below. Unauthorized access to public and National Forest System lands is managed pursuant to the direction of the applicable RMPs and LRMPs. The effects of unauthorized OHV use during construction with appropriate mitigation, if any, would be similar to the effects during operations.

The periodic inspection and maintenance activities associated with operation of the B2H Project would have long-term but low effects on OHV use in designated OHV areas or on general OHV use. Noise effects of project operations would be noticeable in the immediate vicinity of the right-of-way.

The project would create additional access routes across areas currently closed to OHVs. In addition, where a right-of-way or new access road crosses trails closed to OHV use, the project may lead to unauthorized use of these trails by OHVs. The Agencies may restrict general public access to closed federal or state roads and project access roads that IPC maintains. In cases of restricted access, IPC would physically close the road with a gate. Gates would be locked with an IPC lock and a federal-agency lock. This would be updated to reflect current road closures and gate locations as necessary. Unless signage or effective barriers are in place, it is likely the access roads would provide additional points of OHV entry into new areas, particularly areas that have low vegetation and are in relatively flat or gentle terrain. With effective implementation of access management measures this effect would be low but long-term, and could result in indirect effects to vegetation (trampling, displacement), soil (compaction and displacement), non-motorized dispersed recreation (noise, visual presence) and indirect impacts to wildlife (displacement).

Comparisons of the number of miles of OHV-designated areas on BLM and Reclamation lands that would be crossed by the Proposed Action and alternative routes are presented in Table 3-124 (OHV land managed under the Southeastern Oregon RMP), in Table 3-125 (OHV land managed under the Owyhee RMP), and in Table 3-126 (OHV land managed under the Wallowa-Whitman LRMP).

The Malheur A Alternative would affect more miles of designated OHV areas than the Proposed Action or the Malheur S Alternative. However, effects to OHV use on the Malheur A Alternative route would be comparable to the Proposed Action and Malheur S Alternative routes, and would be moderate but temporary during construction, and long-term but low during operations.

The Timber Canyon Alternative would cross 6.9 miles of the Bald Angel OHV Closure Area (designated OHV routes only) in the Wallowa-Whitman National Forest. The Proposed Action does not affect OHV closure areas on National Forest System lands. Indirect effects of the Timber Canyon Alternative route would include providing physical access to OHV closed areas that may be difficult to police, and the potential for vegetation, wildlife and other resource effects due to unauthorized OHV access. These effects, while unintended, could be low to high, and could be long-term in duration.

Table 3-124. Miles of OHV Designations on BLM and Reclamation Managed Lands under the Southeastern Oregon RMP Crossed by the Proposed Action and Alternative Routes

Route Name	County	Management Agency	Approximate MP Start	Approximate MP End	Limited to Designated Routes (miles) [1]	Limited to Existing Routes (miles) [1]
Proposed Action	Malheur	BLM	261.2	261.8	0.4	0.0
			261.7	262.1	0.3	0.0
			262.3	272.3	0.0	10.0
			272.3	273.0	0.0	0.7
			273.8	274.3	0.0	0.3
			275.7	277.3	0.0	1.5
		Reclamation	261.7	261.8	0.1	0.0
			262.0	262.3	0.2	0.0
			262.2	262.4	0.0	0.1
				Total Proposed Action	1.0	12.6

Route Name	County	Management Agency	Approximate MP Start	Approximate MP End	Limited to Designated Routes (miles) [1]	Limited to Existing Routes (miles) [1]
Proposed Action and Alternative Route Comparisons						
Tub Mountain South Alternative	Baker/Malheur	BLM	12.6	23.3	0.0	10.6
			7.3	7.6	0.0	0.2
			7.9	11.3	0.0	3.3
Willow Creek Alternative	Baker/Malheur	BLM	4.8	5.9	0.0	1.0
			6.0	7.6	0.0	1.5
			7.6	12.2	0.0	4.5
Proposed Action Compare to Malheur S Alternative	Malheur	BLM	261.2	261.8	0.4	0.0
			261.7	262.1	0.3	0.0
			262.3	272.3	0.0	10.0
			272.3	273.0	0.0	0.7
		Reclamation	261.7	261.8	0.1	0.0
			262.0	262.3	0.2	0.0
			262.2	262.4	0.0	0.1
Malheur S Alternative	Malheur	BLM	22.7	23.9	1.1	0.0
			23.9	24.2	0.2	0.0
			24.1	24.9	0.0	0.7
			24.9	32.9	0.0	7.9
			32.8	33.5	0.0	0.7
		Reclamation	24.8	25.0	0.0	0.1
Proposed Action Compare to Malheur A Alternative	Malheur	BLM	261.2	261.8	0.4	0.0
			261.7	262.1	0.3	0.0
			262.3	272.3	0.0	10.0
			272.3	273.0	0.0	0.7
		Reclamation	261.7	261.8	0.1	0.0
			262.0	262.3	0.2	0.0
			262.2	262.4	0.0	0.1

Route Name	County	Management Agency	Approximate MP Start	Approximate MP End	Limited to Designated Routes (miles) [1]	Limited to Existing Routes (miles) [1]
Malheur A Alternative	Malheur	BLM	21.7	22.6	0.8	0.0
			23.0	23.2	0.1	0.0
			23.5	24.1	0.5	0.0
			24.1	25.1	0.9	0.0
			25.0	30.2	0.0	5.2
			30.1	31.1	0.8	0.0
			31.0	33.1	0.0	2.0
		Reclamation	23.1	23.5	0.2	0.0
			23.4	23.6	0.0	0.1
			23.5	23.6	0.0	0.0
			24.0	24.1	0.0	0.0
			24.0	24.2	0.0	0.1
			24.1	24.2	0.0	0.0

Table Note: [1] Oregon OHV data developed for the Malheur and Jordan resource areas in the Southeastern Oregon RMP.

Table 3-125. Miles of OHV Designations on BLM Land Managed under the Owyhee RMP Crossed by Proposed Action and Alternative Routes

Route Name	County	Approximate MP Start	Approximate MP End	Limited (miles) [1]
Proposed Action	Owyhee	277.2	284.0	6.7
		287.2	287.6	0.3
		287.6	289.8	2.1
		290.2	300.6	10.4
			Total Proposed Action	19.5

Table Note: [1] Idaho OHV data developed for the state and approved by the BLM Idaho data steward.

Table 3-126. Miles of OHV Closure Areas on USFS Land Managed under the Wallowa-Whitman National Forest LRMP Crossed by the Proposed Action and Alternative Routes

Route Name	County	Approximate MP Start	Approximate MP End	Bald Angel Closure Area (miles) [1]	Spring Creek Closure Area (miles) [1]
Proposed Action	Union	103.6	105.1	0.0	1.4
		106.4	106.5	0.0	0.0
		106.4	106.6	0.0	0.1
			Total Proposed Action	0.0	1.5
Proposed Action and Alternative Route Comparisons					
Timber Canyon Alternative	Union/Baker	12.1	12.2	0.0	0.0
		12.1	12.9	0.8	0.0
		12.8	13.1	0.1	0.0
		13.0	13.9	0.8	0.0
		14.3	19.6	5.2	0.0
		20.3	20.4	0.0	0.0
		20.4	20.8	0.3	0.0

Table Note: [1] Area closures for roads published by the Wallowa-Whitman National Forest in 2005.

BLM- and USFS-Designated Recreation Opportunity Spectrum Areas

In the Owyhee RMP area, the Proposed Action crosses 18.5 miles of lands designated ROS classification Roaded Natural, and 0.6 miles of lands designated ROS Primitive/Semi-primitive. In the Southeastern Oregon RMP area, the Proposed Action crosses 33 miles of lands designated ROS Semi-Primitive/Motorized and 13.6 miles of lands designated ROS Semi-Primitive/Non-motorized. Within the Wallowa-Whitman LRMP area, the Proposed Action would cross 5.6 miles of ROS Roaded Natural Modified areas.

For the purposes of effects analysis, the number of ROS-designated acres expected to receive some level of effect from construction and operations of the Proposed Action and the alternatives was developed by assuming direct effects within the 250 foot right of way and on access roads and indirect effects to all lands within one-half mile of the centerline of the project. Although federal ROS designations don’t apply to state and private lands, for the purposes of describing project effects to recreational resources, the ROS designation of federal lands was assumed for non-federal lands within the one-half mile analysis area.

The number of acres of ROS-designated federal lands and adjacent state and private lands within the analysis area affected by the Proposed Action is shown in Table 3-127.

Table 3-127. Acres of ROS Designation in the Analysis Area Affected by the Proposed Action

County	Managing Agency	Primitive, Semi-Primitive (acres)	Semi-Primitive Non-Motorized (acres)	Semi-Primitive Motorized (acres)	Roaded Natural (acres)	Roaded or Roaded Modified (acres)
Union (Oregon)	USFS	0	0	0	108.1	4,020.5
Union (Oregon)	Private	0	0	0	0	162.6
Malheur (Oregon)	BLM	0	7,856.3	23,816.7	2,543.8	58.9
Malheur (Oregon)	Reclamation	0	0	377.5	114.6	0.5
Malheur (Oregon)	Private	0	2,196.0	6,478.2	1,971.2	7,660.8
Malheur (Oregon)	State	0	209.1	0	0	0
Owyhee (Idaho)	BLM	429.5	0	0	13,134.5	0
Owyhee (Idaho)	Reclamation	0	0	0	23.6	0
Owyhee (Idaho)	Private	9.4	0	0	246.9	0
Owyhee (Idaho)	State	0	0	0	2,004.9	0
	Project Totals	438.9	10,261.4	30,672.4	20,147.6	11,903.3

Table Source: Resource Report 9 Addendum, IPC 2013

Table Abbreviations: USFS = United States Forest Service; BLM = Bureau of Land Management; Reclamation = Bureau of Reclamation; ROS = Recreational Opportunity Spectrum.

The expectations of recreationists in Primitive and Semi-Primitive Non-Motorized ROS classifications is of an unmodified or naturally-appearing environment, with a very low to low interaction between users. Construction of the B2H Project in these areas would be noticeable with short-term effects and limited to areas of active construction. Unauthorized OHV use of new access roads in Primitive and Semi-Primitive Non-Motorized ROS classifications could affect the expectations of very low to low interactions with other users.

The expectations of recreational users in Roaded Natural and Semi-Primitive/Motorized ROS-designated areas are somewhat less than for Primitive and Non-Motorized areas. The landscape is predominantly natural appearing with opportunities to be farther than one-half mile from motorized travel routes. Interactions with other users range from low to high, depending on terrain and the proximity of roads and developed sites. Construction of the B2H Project in these areas would create moderate noise and dust effects, which would be short-term and limited to the vicinity of active construction.

Recreational users in ROS Roaded and Roaded Modified areas generally expect to encounter other recreational users and, in timbered areas, timber management activities. Project construction in these ROS-designated areas would be noticeable and moderate, but would also be temporary and limited to the specific areas of construction activity. Long-term effects for project operations would be low.

The Southeastern Oregon RMP (BLM 2002) and Owyhee RMP (BLM 1999) and the Wallowa-Whitman National Forest LRMP (USFS 1990) designate ROS areas. No ROS areas are designated in the current Baker RMP (BLM 1989). Comparisons of the number of miles of ROS-designated federal land that would be crossed by the Proposed Action and alternatives are presented in Table 3-128 (for ROS land managed under the Southeastern Oregon RMP), in Table 3-129 (for ROS land managed under the Owyhee RMP), and in Table 3-130 (for ROS land managed under the Wallowa-Whitman LRMP).

Table 3-128. Miles of ROS-Designated Federal Land Managed under the Southeastern Oregon RMP Crossed by the Proposed Action and Alternatives

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Rural (miles) [1]	Semi-Primitive Motorized (miles) [1]	Semi-Primitive Non-Motorized (miles) [1]
Proposed Action	Malheur	205.3	206.6	0.0	0.0	0.0	1.2
		206.5	207.7	0.0	0.0	1.0	0.0
		207.6	209.6	0.0	0.0	0.0	2.0
		209.5	212.1	0.0	0.0	2.4	0.0
		212.0	213.4	1.3	0.0	0.0	0.0
		213.3	214.7	0.0	0.0	1.3	0.0
		214.6	215.6	1.0	0.0	0.0	0.0
		215.5	215.7	0.0	0.1	0.0	0.0
		215.6	216.2	0.5	0.0	0.0	0.0
		216.1	219.1	0.0	0.0	0.0	2.9
		219.0	219.8	0.0	0.0	0.7	0.0
		219.7	222.1	0.0	2.3	0.0	0.0
		222.0	222.5	0.0	0.0	0.4	0.0
		222.4	224.8	0.0	0.0	0.0	2.4
		224.7	229.7	0.0	0.0	4.8	0.0
		229.6	232.6	0.0	0.0	3.0	0.0
		232.5	232.8	0.0	0.0	0.1	0.0
		232.7	235.5	0.0	0.0	2.7	0.0
		235.4	237.8	0.0	0.0	0.0	2.3
		237.7	238.5	0.0	0.0	0.7	0.0
		238.4	239.1	0.0	0.5	0.0	0.0
		239.0	241.1	0.0	0.0	0.0	2.1
		241.0	241.2	0.0	0.0	0.0	0.0
		241.1	241.7	0.0	0.0	0.0	0.5
		241.6	242.7	0.0	0.0	1.0	0.0
		242.6	242.7	0.0	0.0	0.1	0.0
		242.6	243.2	0.5	0.0	0.0	0.0

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Rural (miles) [1]	Semi-Primitive Motorized (miles) [1]	Semi-Primitive Non-Motorized (miles) [1]
		243.1	243.3	0.0	0.1	0.0	0.0
		243.2	243.7	0.5	0.0	0.0	0.0
		243.6	244.0	0.0	0.0	0.2	0.0
		243.9	244.9	0.0	0.0	0.0	0.9
		244.8	246.1	0.0	0.0	0.0	1.1
		246.0	252.3	0.0	6.2	0.0	0.0
		252.2	252.3	0.0	0.0	0.0	0.0
		252.2	259.8	0.0	0.0	7.5	0.0
		259.7	260.1	0.0	0.0	0.0	0.3
		260.0	260.9	0.0	0.0	0.9	0.0
		260.8	262.4	1.5	0.0	0.0	0.0
		262.3	271.2	0.0	0.0	8.8	0.0
		271.1	272.3	1.1	0.0	0.0	0.0
		272.2	272.4	0.0	0.0	0.1	0.0
		272.3	273.2	0.0	0.0	0.8	0.0
		273.1	277.3	0.0	0.0	4.1	0.0
Proposed Action	Owyhee	277.2	277.3	0.0	0.0	0.0	0.0
			Total Proposed Action	6.4	9.2	40.6	15.7
Proposed to Alternative Route Comparisons							
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	205.3	206.6	0.0	0.0	0.0	1.2
		206.5	207.7	0.0	0.0	1.0	0.0
		207.6	209.6	0.0	0.0	0.0	2.0
		209.5	212.1	0.0	0.0	2.4	0.0
		212.0	213.4	1.3	0.0	0.0	0.0
		213.3	214.7	0.0	0.0	1.3	0.0
		214.6	215.6	1.0	0.0	0.0	0.0
		215.5	215.7	0.0	0.1	0.0	0.0
		215.6	216.2	0.5	0.0	0.0	0.0

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Rural (miles) [1]	Semi-Primitive Motorized (miles) [1]	Semi-Primitive Non-Motorized (miles) [1]
		216.1	219.1	0.0	0.0	0.0	2.9
		219.0	219.8	0.0	0.0	0.7	0.0
		219.7	222.1	0.0	2.3	0.0	0.0
		222.0	222.5	0.0	0.0	0.4	0.0
		222.4	224.8	0.0	0.0	0.0	2.4
		224.7	229.7	0.0	0.0	4.8	0.0
		229.6	232.6	0.0	0.0	3.0	0.0
Tub Mountain South Alternative	Baker/Malheur	19.5	20.5	0.0	0.0	0.0	0.9
		20.4	21.1	0.0	0.0	0.6	0.0
		21.0	23.2	0.0	0.0	0.0	2.1
		23.1	23.3	0.0	0.0	0.2	0.0
		23.2	26.8	0.0	3.5	0.0	0.0
		26.7	34.554	0.0	0.0	7.8	0.0
		5.5	6.5	0.0	0.0	0.8	0.0
		6.4	7.0	0.5	0.0	0.0	0.0
		6.9	19.6	0.0	0.0	12.7	0.0
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	205.3	206.6	0.0	0.0	0.0	1.2
		206.5	207.7	0.0	0.0	1.0	0.0
		207.6	209.6	0.0	0.0	0.0	2.0
		209.5	212.1	0.0	0.0	2.4	0.0
		212.0	213.4	1.3	0.0	0.0	0.0
		213.3	214.7	0.0	0.0	1.3	0.0
		214.6	215.6	1.0	0.0	0.0	0.0
		215.5	215.7	0.0	0.1	0.0	0.0
		215.6	216.2	0.5	0.0	0.0	0.0
		216.1	219.1	0.0	0.0	0.0	2.9
		219.0	219.8	0.0	0.0	0.7	0.0
		219.7	222.1	0.0	2.3	0.0	0.0
		222.0	222.5	0.0	0.0	0.4	0.0

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Rural (miles) [1]	Semi-Primitive Motorized (miles) [1]	Semi-Primitive Non-Motorized (miles) [1]
		222.4	224.8	0.0	0.0	0.0	2.4
		224.7	229.7	0.0	0.0	4.8	0.0
Willow Creek Alternative	Baker/Malheur	12.1	24.2	0.0	12.0	0.0	0.0
		24.1	24.596	0.0	0.0	0.5	0.0
		4.8	12.2	0.0	0.0	7.3	0.0
Proposed Action Compared to Malheur S Alternative	Malheur	242.6	242.7	0.0	0.0	0.1	0.0
		242.6	243.2	0.5	0.0	0.0	0.0
		243.1	243.3	0.0	0.1	0.0	0.0
		243.2	243.7	0.5	0.0	0.0	0.0
		243.6	244.0	0.0	0.0	0.2	0.0
		243.9	244.9	0.0	0.0	0.0	0.9
		244.8	246.1	0.0	0.0	0.0	1.1
		246.0	252.3	0.0	6.2	0.0	0.0
		252.2	252.3	0.0	0.0	0.0	0.0
		252.2	259.8	0.0	0.0	7.5	0.0
		259.7	260.1	0.0	0.0	0.0	0.3
		260.0	260.9	0.0	0.0	0.9	0.0
		260.8	262.4	1.5	0.0	0.0	0.0
		262.3	271.2	0.0	0.0	8.8	0.0
		271.1	272.3	1.1	0.0	0.0	0.0
		272.2	272.4	0.0	0.0	0.1	0.0
		272.3	273.2	0.0	0.0	0.8	0.0
Malheur S Alternative	Malheur	0.0	0.1	0.0	0.0	0.1	0.0
		0.0	0.6	0.5	0.0	0.0	0.0
		0.5	0.7	0.0	0.1	0.0	0.0
		0.6	1.1	0.5	0.0	0.0	0.0
		1.0	1.2	0.0	0.0	0.1	0.0
		1.1	2.9	0.0	0.0	0.0	1.6
		11.5	18.5	0.0	0.0	6.9	0.0
		18.4	19.4	0.0	0.0	0.9	0.0
		19.3	20.0	0.0	0.0	0.0	0.6
		19.9	22.8	0.0	0.0	2.7	0.0

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Rural (miles) [1]	Semi-Primitive Motorized (miles) [1]	Semi-Primitive Non-Motorized (miles) [1]
		2.8	5.7	0.0	0.0	2.9	0.0
		22.7	24.6	1.8	0.0	0.0	0.0
		24.5	31.5	0.0	0.0	6.9	0.0
		31.4	32.8	1.3	0.0	0.0	0.0
		32.7	32.9	0.0	0.0	0.1	0.0
		32.8	33.636	0.0	0.0	0.8	0.0
		5.6	11.6	0.0	0.0	0.0	5.8
Proposed Action Compared to Malheur A Alternative	Malheur	242.6	242.7	0.0	0.0	0.1	0.0
		242.6	243.2	0.5	0.0	0.0	0.0
		243.1	243.3	0.0	0.1	0.0	0.0
		243.2	243.7	0.5	0.0	0.0	0.0
		243.6	244.0	0.0	0.0	0.2	0.0
		243.9	244.9	0.0	0.0	0.0	0.9
		244.8	246.1	0.0	0.0	0.0	1.1
		246.0	252.3	0.0	6.2	0.0	0.0
		252.2	252.3	0.0	0.0	0.0	0.0
		252.2	259.8	0.0	0.0	7.5	0.0
		259.7	260.1	0.0	0.0	0.0	0.3
		260.0	260.9	0.0	0.0	0.9	0.0
		260.8	262.4	1.5	0.0	0.0	0.0
		262.3	271.2	0.0	0.0	8.8	0.0
		271.1	272.3	1.1	0.0	0.0	0.0
		272.2	272.4	0.0	0.0	0.1	0.0
		272.3	273.2	0.0	0.0	0.8	0.0
Malheur A Alternative	Malheur	0.0	0.1	0.0	0.0	0.1	0.0
		0.0	0.6	0.5	0.0	0.0	0.0
		0.5	0.7	0.0	0.1	0.0	0.0
		0.6	1.1	0.5	0.0	0.0	0.0
		1.0	1.2	0.0	0.0	0.1	0.0
		1.1	2.9	0.0	0.0	0.0	1.6
		11.5	18.5	0.0	0.0	6.9	0.0
		18.4	19.8	0.0	0.0	1.3	0.0

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Rural (miles) [1]	Semi-Primitive Motorized (miles) [1]	Semi-Primitive Non-Motorized (miles) [1]
		19.7	20.9	0.0	0.0	0.0	1.1
		2.8	5.7	0.0	0.0	2.9	0.0
		20.8	22.0	0.0	0.0	1.1	0.0
		21.9	22.1	0.0	0.0	0.0	0.1
		22.0	22.2	0.0	0.0	0.1	0.0
		22.1	24.4	2.2	0.0	0.0	0.0
		24.3	31.2	0.0	0.0	6.9	0.0
		31.1	32.2	1.0	0.0	0.0	0.0
		32.1	33.2	0.0	0.0	1.0	0.0
		5.6	11.6	0.0	0.0	0.0	5.8
Proposed Action Compared to Double Mountain Alternative	Malheur	244.8	246.1	0.0	0.0	0.0	1.1
		246.0	252.3	0.0	6.2	0.0	0.0
		252.2	252.3	0.0	0.0	0.0	0.0
Double Mountain Alternative	Malheur	0.0	1.0	0.0	0.0	0.0	0.9
		0.9	3.1	0.0	0.0	2.1	0.0
		3.0	5.0	0.0	0.0	0.0	1.9
		4.9	7.386	0.0	0.0	2.4	0.0

Table Note: [1] ROS dataset for the BLM Southeastern Oregon RMP for 2002 overlaid with BLM-managed lands.

Table 3-129. Miles of ROS-Designated Federal Land Managed under the Owyhee RMP Crossed by the Proposed Action and Alternative Routes

Route Name	County	Approximate MP Start	Approximate MP End	Roaded Natural (miles) [1]	Primitive/ Semi-Primitive (miles) [1]
Proposed Action	Owyhee	277.2	283.3	6.0	0.0
Proposed Action	Owyhee	283.2	283.9	0.0	0.6
Proposed Action	Owyhee	283.8	284.0	0.1	0.0
Proposed Action	Owyhee	284.8	289.8	5.0	0.0
Proposed Action	Owyhee	290.2	300.6	10.3	0.0
			Total Proposed Action	21.4	0.6

Table Note: [1] Owyhee ROS dataset from the BLM state office overlaid with BLM-managed lands.

Table 3-130. Miles of ROS-Designated Federal Land Managed under the Wallowa-Whitman National Forest LRMP Crossed by the Proposed Action and Alternatives

Route Name	County	Approximate MP Start (miles) [1]	Approximate MP End (miles) [1]	Roaded Natural (miles) [1]	Roaded Natural Modified (miles) [1]
Proposed Action	Union	106.4	106.6	0.0	0.1
Proposed Action	Union	99.3	99.7	0.0	0.2
Proposed Action	Union	99.7	105.1	0.0	5.3
			Total Proposed Action	0.0	5.6
Proposed Action and Alternative Route Comparisons					
Timber Canyon Alternative	Union/Baker	12.1	13.9	1.7	0.0
Timber Canyon Alternative	Union/Baker	14.3	31.3	16.8	0.0
Timber Canyon Alternative	Union/Baker	7.1	8.2	1.0	0.0
Timber Canyon Alternative	Union/Baker	8.4	9.0	0.5	0.0

Table Note: [1] ROS dataset for the Wallowa-Whitman National Forest LRMP for 2004 overlaid with USFS lands.

For the purposes of effects analysis, the number of ROS-designated acres expected to receive some level of effect from construction and operations of the Proposed Action was developed by assuming effects to all lands within 0.5 mile of the centerline of the project and the centerlines of all access roads. Comparisons of the number of acres of ROS-designated land within 0.5 mile of these centerlines that would be affected by the Proposed Action and alternative routes are presented in Table 3-131 (for ROS land managed under the Southeastern Oregon RMP), in Table 3-132 (for ROS land managed under the Owyhee RMP), and in Table 3-133 (for ROS land managed under the Wallowa-Whitman LRMP). Although federal ROS designations do not apply to state and private lands, for the purposes of describing project effects to recreational resources, the ROS designation of federal lands was assumed for non-federal lands within the 0.5-mile effects analysis area.

Selection of the Timber Canyon Alternative would affect approximately 12,029 more acres of National Forest System Lands and approximately 203 more acres of private lands that are either designated ROS Roaded Natural or possess those qualities than the Proposed Action. Selection of the Timber Canyon Alternative would result in moderate effects to recreational resources for both the construction and operations of the B2H Project, compared to low and temporary effects for the Proposed Action.

The Double Mountain Alternative would affect approximately one-third as many acres possessing ROS Roaded characteristics as the Proposed Action. The recreational effects of the Double Mountain Alternative would be primarily temporary and low in nature.

Table 3-131. Acres of ROS-Designated Land Managed under the Southeastern Oregon RMP within 0.5 Mile of Proposed Action and Alternative Centerlines and New Access Roads

Route Name	County	Management Agency	Roaded Natural (acres) [1]	Rural (acres) [1]	Semi-Primitive Motorized (acres) [1]	Semi-Primitive Non-Motorized (acres) [1]
Proposed Action	Malheur	BLM	2,520.14	65.50	23,778.93	7,789.62
Proposed Action	Malheur	Reclamation	114.56	0.43	306.81	0.00
Proposed Action	Malheur	Private	1,960.36	8,194.72	6,430.73	2,248.95
Proposed Action	Malheur	State	0.00	0.00	0.00	208.08
Proposed Action	Owyhee	BLM	0.00	0.00	0.03	0.00
		Total Proposed Action	4,595.06	8,260.65	30,516.50	10,246.65
Proposed Action and Alternative Route Comparisons						
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	BLM	443.66	1.18	7,848.65	4,188.71
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	Private	1,806.38	2,443.83	3,213.15	1,657.05
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur	State	0.00	0.00	0.00	208.09
Tub Mountain South Alternative	Baker/Malheur	BLM	0.00	0.18	13,458.95	1,661.29
Tub Mountain South Alternative	Baker/Malheur	Reclamation	0.00	20.05	11.22	0.00
Tub Mountain South Alternative	Baker/Malheur	Private	390.78	2,959.76	2,821.00	112.55
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	BLM	443.66	1.18	6,055.59	4,188.71
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	Private	1,806.38	2,443.83	2,837.40	1,657.05
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	State	0.00	0.00	0.00	208.09
Willow Creek Alternative	Baker/Malheur	BLM	0.00	78.54	6,139.33	234.86
Willow Creek Alternative	Baker/Malheur	Private	0.00	8,413.94	509.79	0.01
Proposed Action Compared to Malheur S Alternative	Malheur	BLM	2,076.13	64.25	13,510.65	1,633.92
Proposed Action Compared to Malheur S Alternative	Malheur	Reclamation	114.56	0.00	94.85	0.00
Proposed Action Compared to Malheur S Alternative	Malheur	Private	153.98	4,747.80	893.00	0.01
Malheur S Alternative	Malheur	BLM	3,001.22	68.02	18,056.23	5,663.34
Malheur S Alternative	Malheur	Reclamation	6.78	0.00	47.41	0.00
Malheur S Alternative	Malheur	Private	69.93	464.83	811.15	0.00
Malheur S Alternative	Malheur	Water	65.65	0.00	0.00	0.00

Route Name	County	Management Agency	Roaded Natural (acres) [1]	Rural (acres) [1]	Semi-Primitive Motorized (acres) [1]	Semi-Primitive Non-Motorized (acres) [1]
Proposed Action Compared to Malheur A Alternative	Malheur	BLM	2,076.13	64.25	13,510.65	1,633.92
Proposed Action Compared to Malheur A Alternative	Malheur	Reclamation	114.56	0.00	94.85	0.00
Proposed Action Compared to Malheur A Alternative	Malheur	Private	153.98	4,747.80	893.00	0.01
Malheur A Alternative	Malheur	BLM	2,737.00	68.00	16,711.20	6,004.50
Malheur A Alternative	Malheu	Reclamation	400.59	0.00	21.48	0.00
Malheur A Alternative	Malheu	Private	86.92	0.00	794.12	0.00
Malheur A Alternative	Malheu	Water	78.94	0.00	0.00	0.00
Proposed Action Compared to Double Mountain Alternative	Malheur	BLM	0.00	0.19	1,112.49	916.28
Proposed Action Compared to Double Mountain Alternative	Malheur	Private	0.00	3,623.14	0.18	0.01
Double Mountain Alternative	Malheur	BLM	0.00	0.17	3,413.58	2,162.81
Double Mountain Alternative	Malheur	Private	0.00	1,575.84	0.12	0.04

Table Note: [1] ROS dataset for the BLM Southeastern Oregon RMP for 2002. Analysis completed using 0.5-mile buffers of individual routes/alternatives and associated new access roads from the indicative layout.

Table 3-132. Acres of ROS-Designated Land Managed under the Owyhee RMP within 0.5 Mile of Proposed Action and Alternative Centerlines and New Access Roads

Route Name	County	Management Agency	Primitive/ Semi-Primitive (acres) [1]	Roaded Natural (acres) [1]
Proposed Action	Malheur	BLM	0.00	0.10
Proposed Action	Owyhee	BLM	408.70	13,312.17
Proposed Action	Owyhee	Reclamation	0.00	28.03
Proposed Action	Owyhee	Private	9.85	466.23
Proposed Action	Owyhee	State	0.00	1,873.55
		Total Proposed Action	418.55	15,680.08

Table Note: [1] Owyhee ROS dataset from the BLM state office. Analysis completed using 0.5-mile buffers of individual routes/alternatives and associated new access roads from indicative layout.

Table 3-133. Acres of ROS-Designated Land Managed under the Wallowa-Whitman National Forest LRMP within 0.5 Mile of Proposed Action and Alternative Centerlines and New Access Roads

Route Name	County	Management Agency	Roaded Natural	Roaded Natural Modified
Proposed Action	Union	Private	0.00	162.82
Proposed Action	Union	USFS	110.72	4,027.35
		Total Proposed Action	110.72	4,190.17
Proposed Action and Alternative Route Comparisons				
Timber Canyon Alternative	Union/Baker	BLM	0.64	0.00
Timber Canyon Alternative	Union/Baker	Private	555.35	0.00
Timber Canyon Alternative	Union/Baker	USFS	16,167.20	0.00

Table Note: [1] ROS dataset for the Wallowa-Whitman National Forest LRMP 2004. Analysis completed using 0.5-mile buffers of individual routes/alternatives and associated new access roads from the indicative layout.

The direct effects on recreation in ROS-designated areas caused by operation of the B2H Project would be long-term. Effects related to project inspection and maintenance in all areas would be infrequent, and therefore low. Noise effects of project operation would be noticeable in the immediate vicinity of the right-of-way. The primary long-term effects of the B2H Project on recreation, particularly in ROS Primitive and Semi-Primitive Non-Roaded designated areas, would be visual effects, which are discussed in Section 3.2.7. Operations of the Proposed Action would affect approximately 10,000 acres of land currently designated ROS Semi-primitive Non-motorized. Post-construction evaluation of the project operation effects may indicate that current ROS designations are inaccurate and suggest re-classification to a lower level of recreational opportunity. These effects would be long-term and either high where the expectations of recreationists under current classifications cannot be met, or moderate where re-classification would be consistent with land management plans.

Scenic Roads

Direct B2H Project construction activity in the vicinity of scenic byways would be temporary and would therefore have moderate effects to the visitor's experience. The effect would be to the immediate area of the construction activity. Additional discussion of the project's visual effects on scenic roads is provided in section 3.2.7, Visual Resources.

The alternative routes cross the same scenic byways as the Proposed Action, but in different locations. The effects of the alternatives would be similar to those of the Proposed Action, but are discussed in more detail in the Visual Resources section.

Inspection and maintenance of the B2H Project during operations would result in insignificant increases in traffic during those activities. The sound generated by the transmission line would be noticeable in the immediate vicinity of the transmission line right-of-way. The primary direct effects of the B2H Project on scenic roads would be visual, and are discussed in Section 3.2.7.

Dispersed Recreation

Construction activities, including the presence of construction crews, construction noise, and the generation of construction-related dust, would have temporary and therefore moderate effects on dispersed recreation activities in the analysis area. These effects would be limited to the immediate areas of construction activity and would be short-term. Some roads used by recreational users would be used for construction traffic, and construction may result in temporary delays in recreational access to some areas. Long term effects of project operations would be low.

The nature of the effects of construction and operation of the B2H Project on dispersed recreation for the action alternatives would be similar to those for the Proposed Action. However, the levels of dispersed recreation in the areas that would be crossed by the Timber Canyon Alternative would likely be higher than for the proposed route segment it would replace due to the character of the terrain and vegetation in the Wallowa-Whitman National Forest, greater hunting and fishing opportunities, and higher scenic values. Because of the higher use of portions of the Timber Canyon Alternative route by recreationists, the effects to dispersed recreation caused by construction and operation of the Proposed Action would be moderate and long-term. The visual effects of the Proposed Action for the Timber Canyon Alternative are discussed in Section 3.2.7.

Operation of the B2H Project would have long-term effects on dispersed recreation in the vicinity of the transmission line. Effects would include noise in the immediate vicinity of the line and periodic vehicular traffic in conjunction with inspection and maintenance of the project. While these effects would occur over the life of the project they would be low. Improvements to existing roads and construction of new roads would provide additional access for dispersed recreation. The primary effects to dispersed recreation would be visual and potential displacement of recreationists to areas with less development and transmission line related maintenance activities. Visual effects of the Proposed Action and alternatives are discussed in Visual Resources (Section 3.2.7).

3.2.6.12 Transportation Regulatory Framework

Federal

Bureau of Land Management and U.S. Forest Service

On federal land, agency roads must meet the applicable minimum standards of width, alignment, grade, surface, etc., found in BLM Manual 9113 (BLM 2011) or in Forest Service Handbook (FSH) 7709.56, *Road Preconstruction Handbook* (USFS 2011); FSH 7709.57, *Road Construction Handbook* (USFS 1992); and FSH 7709.59, *Transportation Operations and Maintenance Handbook* (USFS 2009b: Chapter 60). These requirements are not anticipated to apply to B2H Project two-track roads or to routes for all-terrain vehicles or utility-terrain vehicles.

On January 12, 2001, the USFS issued the final National Forest System Road Management Rule, which was updated in 2005 and renamed the Travel Management Rule. This rule revises regulations concerning the management, use, and maintenance of the National Forest Transportation System. The final rule is intended to help ensure that additions to the National Forest System road network are needed for resource management and use; that construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and that unneeded roads are identified and decommissioned.

To comply with the 2005 Travel Management Rule, the Wallowa-Whitman National Forest has undertaken travel management planning across much of the forest. The Final EIS was released in February 2012 (USFS 2012) however the decision was withdrawn and the forest is currently reassessing the planning and public involvement process (USFS 2012).

BLM resource management plans and USFS land and resource management plans provide direction on resource management that govern road construction and use on federal land. Both the USFS and BLM have access and transportation plans that designate areas for motorized use, prohibit some uses to protect resources, or limit road use to certain times or to designated routes of the year for resource protection. Any use, maintenance or improvement of existing BLM or USFS roads, and any construction of new roads on BLM- or USFS-managed lands, requires previous written authorization. In addition, the use of existing roads for hauling oversize or over-weight loads, or hauling commercial or construction materials also requires prior written authorization from the jurisdictional agency. It is anticipated that any use, improvement or construction of BLM or USFS roads would be addressed in the right-of-way or special use permit authorization.

Federal Aviation Administration

Activities accompanied by helicopter flight operations operate under the control of the FAA. As described under Title 14 Code of Federal Regulations Part 77, the FAA is also concerned with the following:

- Any construction or alteration exceeding 200 feet above ground level
- Any construction or alteration:
  - Within 20,000 feet (3.79 miles) of a public-use or military airport that exceeds a 100:1 sloping surface from any point on the runway of each airport with at least one runway more than 3,200 feet
  - Within 10,000 feet (1.89 miles) of a public-use or military airport that exceeds a 50:1 sloping surface from any point on the runway of each airport with its longest runway no more than 3,200 feet
  - Within 5,000 feet of a public-use heliport that exceeds a 25:1 sloping surface

These regulations do not apply to private landing strips. None of these conditions are anticipated to apply to the B2H Project; therefore, IPC would not need to file a notice of construction activities with the FAA. Towers would not exceed 195 feet above ground level, and structures are not planned close enough to airports to exceed the specified sloping surfaces.

State of Oregon

Oregon Administrative Rule 734-055 requires an encroachment permit from the Oregon Department of Transportation (ODOT) Highway Division to construct pole lines, which include poles, wires, guys, anchors, and related fixtures within or across State road rights-of-way. The rule applies to and governs the location, installation, construction, maintenance, and use of pole lines and other operations on the state highway right-of-way and properties under ODOT jurisdiction. The ODOT district manager reviews permit applications for the following:

- Accommodation of utility facilities with no adverse effect on traffic safety, operation, maintenance, and aesthetic quality of the highway system
- Incorporation of the appropriate industry code standards and American Association of State Highway and Transportation Officials publications
- Placement of utility installations in reasonable locations for construction and maintenance
- Safe and unimpaired use of the highway
- Evaluation of environmental and economic impacts of any loss or impairment of productive agricultural land associated with alternatives of the utility facilities that are outside the highway right-of-way

In Oregon, activities on nonfederal forest land must also comply with the Oregon Forest Practices Act rules; Oregon Revised Statute 527, and its attendant rules; and Oregon Administrative Rule Chapter 629, Divisions 605–665. These rules will apply to portions of the B2H Project that cross forest land. The Oregon Forest Practices Act rules are intended to provide resource protection and set standards for planning forestry practices; conducting harvesting, road construction, and maintenance; protecting state water quality; limiting effects on specified resource sites (e.g., streams, wetlands, nesting bird sites); providing for public safety downslope of high landslide hazard locations; and determining reforestation or land conversion requirements. Under the Oregon Forest Practices Act, strict regulations govern the location, construction, maintenance, and repair of roads on nonfederal forest land. Roads must avoid marshes; meadows; drainage channels; riparian areas; and, when possible, steep terrain.

STATE OF IDAHO

The Idaho Transportation Department's (ITD) *Guide for Utility Management* (2012) provides the permit, encroachment, and occupancy requirements for construction and operations activities. The transport, storage, and discharge of blasting materials shall be in accordance with Section 320 of the Idaho General Safety and Health Standards (Idaho Division of Building Safety 2006).

Idaho also has a Forest Practices Act that includes road standards and guidelines to maintain forest productivity, water quality, and fish and wildlife habitat.

COUNTIES

Counties typically require that the placement of any structures on, over, or under county roads requires an encroachment permit, road-use permit, or other appropriate license.

In addition, before conducting work within or above a road right-of-way, an encroachment permit or similar authorization is required from the applicable jurisdictional agency at locations where construction activities will occur within or above the public road right-of-way. The specific requirements of the encroachment permit from the applicable transportation agencies are determined on a project-by-project basis. The encroachment permit issued by state and local jurisdictions may include the following requirements:

- Identify all roadway locations where special construction techniques (e.g., directional drilling or night construction) will be used to minimize impacts on traffic flow.
- Develop circulation and detour plans to minimize impacts on local street circulation. This may include the use of signing and flagging to guide vehicles through or around the construction zone.
- Schedule truck trips outside of peak morning and evening commute hours.
- Limit, to the extent possible, lane closures during peak hours.
- Include detours for areas potentially affected by project construction.
- Install temporary traffic-control devices as specified in the Manual on Uniform Traffic Control Devices for Streets and Highways (Federal Highway Administration 2009).
- Store construction materials only in designated areas.

3.2.6.13 Transportation Issues Identified for Analysis

- Could project construction cause an increase in local road traffic or cause lane closures?
- Would the project cause wear and tear on existing roads?
- Would the project create new roads?
- Would construction and operation activities affect highways, bridges, and railroads?
- Would the project disrupt access for emergency service providers, school buses, and mail delivery?
- Would the project affect airports or create hazards to local airplane traffic?
- Would the power lines and towers reduce aircraft routes for recreation, commercial use, or crop management?

3.2.6.14 Transportation Methodology

For effects to road systems, the analysis area is composed of four parts: (1) existing roads within 0.5 mile of each side of the Proposed Action and alternatives, resulting in a 1-mile analysis area; (2) proposed new or improved roads within a 1-mile analysis area connecting structure locations, unless terrain intervenes; (3) existing roads outside a 1-mile-wide analysis area needing improvement to a standard to support construction traffic; and (4) proposed new roads outside a 1-mile-wide analysis area to reach individual structure locations or the B2H Project right-of-way.

The analysis area for railroads is 0.5 mile on each side of the Proposed Action and alternatives, resulting in a 1-mile-wide analysis area. The analysis area for airports includes locations where the Proposed Action and alternatives intersect a 3-mile area around an airport, airstrip, or heliport.

Data for the transportation network were collected and analyzed from highway maps and geographic information system coverage, route alignment maps, and other maps from various reports and websites of the affected state and local agencies. Available road data were evaluated, including BLM and USFS roads, public and private roads, and primitive roads. IPC and its engineering contractor evaluated existing roads that could be used to access the transmission line corridor. They identified the existing roads without improvements that would be used to access the corridor, the existing roads requiring improvements, and new roads that would be constructed as part of the proposed B2H Project. Traffic volume data were obtained from agency websites and databases. Locations of railroads, bridges, airports, heliports, and landing strips were obtained from the ODOT State Railway System, the ITD Statewide Rail Plan, and Bureau of Transportation Statistics databases and aerial photography.

3.2.6.15 Transportation Affected Environment

This section identifies the transportation facilities within the analysis area for the entire B2H Project that could be affected by construction, operations, maintenance, and decommissioning of the B2H Project. Transportation facilities in the vicinity of the analysis area include interstate and state highways; county and local roads; two-track roads; bridges; railroads, and airports.

For effects to road systems, the analysis area is composed of four parts: (1) existing roads within 0.5 mile of each side of the Proposed Action and alternatives, resulting in a 1-mile analysis area; (2) proposed new or improved roads within a 1-mile analysis area connecting structure locations, unless terrain intervenes; (3) existing roads outside a 1-mile-wide analysis area needing improvement to a standard to support B2H Project construction traffic; and (4) proposed new roads outside a 1-mile-wide analysis area to reach individual structure locations or the B2H Project right-of-way.

The analysis area for railroads is 0.5 mile on each side of the Proposed Action and alternatives, resulting in a 1-mile-wide analysis area. The analysis area for airports includes locations where the Proposed Action and alternatives intersect a 3-mile area around an airport, airstrip, or heliport.

Highways, Roads, Bridges, Railroads, and Pipelines

Many federal and state highways occur within the analysis area; however, most of the roads that would be affected are low-standard roads, often little more than two tracks. Table 3-134 shows the miles of existing highways, roads, bridges, railroads, and pipelines within 0.5 mile of the Proposed Action and alternatives. Table 3-134 also shows the land ownerships and management responsibilities for these transportation facilities. In Oregon, from Boardman to the southeastern extent of Baker County, the Proposed Action and alternatives roughly parallel Interstate 84 (I-84). U.S. Highways 20, 26, and 395 (U.S. 20, U.S. 26, and U.S. 395) cross the analysis area in Oregon, between Little Valley (near Brogan) and Hope (near Pilot Rock). In 2009, average daily traffic counts for I-84 ranged from 10,000 to 15,000 vehicles between Boardman and Pendleton to 5,000 to 10,000 vehicles from Pendleton through the rest of the analysis area. Traffic counts on U.S. 20, U.S. 26, and U.S. 395 in the analysis area ranged from 0 to 2,500 vehicles (ODOT 2009). In Idaho, the analysis area crosses U.S. Highway 95 (U.S. 95) (1,000 to 5,000 vehicles per day; ITD 2009). Main rail lines operating in the region include Union Pacific Railroad and Oregon Eastern Railroad.

Table 3-134. Existing Roads, Railroads, Pipelines, and Bridges within 0.5 Mile of the Proposed Action and Alternatives

Route Name	County	Route Length (miles)	Non-highway, Other (miles)	Non-highway, Private (miles)	Non-highway, Forest Service (miles)	Non-highway, BLM (miles)	Non-highway, County (miles)	State Highway (miles)	US Highway (miles)	Interstate Highway (miles)	Total Roads (miles)	Railroads (miles)	Pipelines (miles)	Number of Bridges
Proposed Action	Morrow (Oregon)	46.8	67.0	—	—	—	—	5.1	—	—	72.1	3.0	3.9	1.0
Proposed Action	Umatilla (Oregon)	49.5	83.4	—	—	—	—	0.5	1.0	—	84.9	1.4	—	1.0
Proposed Action	Union (Oregon)	39.8	75.6	4.0	20.0	—	—	2.2	—	10.4	112.3	13.1	20.6	8.0
Proposed Action	Baker (Oregon)	69.2	85.7	9.6	—	21.6	33.3	2.6	—	12.8	165.8	22.2	34.0	15.0
Proposed Action	Malheur (Oregon)	72.0	101.0	0.1	—	16.8	12.2	—	2.6	—	132.7	1.8	—	—
Proposed Action	Owyhee (Idaho)	23.8	64.0	—	—	—	—	0.6	1.5	—	66.1	—	—	1.0
Proposed 138/69-kV Rebuild	Baker (Oregon)	5.3	10.7	1.0	—	1.4	3.1	—	—	6.0	22.1	7.5	12.7	10.0
Total Proposed Action Miles		306.4	487.4	14.7	20.0	39.8	48.6	11.0	5.1	29.2	656.0	49.0	71.2	36.0
Proposed Action and Alternative Comparisons														
Proposed Action Compared to Horn Butte Alternative	Morrow (Oregon)	34.1	44.2	—	—	—	—	3.4	—	—	47.6	3.0	3.9	—
Horn Butte Alternative	Morrow (Oregon)	27.5	29.8	—	—	—	—	3.4	—	—	33.2	3.0	3.9	—
Proposed Action Compared to Longhorn Alternative and Longhorn Variation	Morrow (Oregon)	34.1	44.2	—	—	—	—	3.4	—	—	47.6	3.0	3.9	—
Longhorn Alternative	Morrow (Oregon)	18.4	29.9	—	—	0.1	—	—	1.0	1.0	32.0	3.4	3.9	2.0
Longhorn Variation	Morrow (Oregon)	22.4	40.4	—	—	—	—	—	1.1	1.0	42.5	1.1	19.9	2
Proposed Action and Alternative Comparisons														
Proposed Action Compare to Glass Hill Alternative	Union (Oregon)	7.5	14.4	—	—	—	—	—	—	—	14.4	—	8.7	—
Glass Hill Alternative	Union (Oregon)	7.5	15.2	—	—	—	—	—	—	—	15.2	—	0.3	—
Proposed Action Compared to Timber Canyon Alternative	Baker (Oregon)	46.3	57.4	8.9	—	18.7	23.1	2.6	—	4.5	115.2	12.7	8.9	5.0
Timber Canyon Alternative	Union/Baker (Oregon)	61.5	54.4	2.8	113.8	5.5	22.6	2.5	—	—	201.5	—	—	1.0
Proposed Action Compared to Flagstaff Alternative	Baker (Oregon)	14.2	19.3	5.3	—	10.6	2.0	2.6	—	1.2	41.0	0.5	2.4	—
Flagstaff Alternative including 230-kV Rebuild	Baker (Oregon)	15.1	30.4	7.0	—	2.5	4.7	3.5	—	4.2	52.3	1.6	8.0	9.0
Proposed Action Compared to Burnt River Mountain Alternative	Baker (Oregon)	16.8	17.6	0.2	—	4.1	14.7	—	—	3.7	40.3	9.4	3.9	7.0
Burnt River Mountain Alternative	Baker (Oregon)	16.8	17.2	5.9	—	7.9	6.6	—	—	2.9	40.6	4.6	14.6	8.0
Proposed Action Compared to Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.2	30.6	0.1	—	7.8	3.8	—	1.6	0.8	44.7	—	2.0	—
Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.6	38.6	0.4	—	7.2	16.8	—	1.4	8.8	73.2	—	15.4	10.0
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur (Oregon)	30.2	24.5	0.1	—	5.4	3.8	—	1.6	—	35.4	—	—	—
Willow Creek Alternative	Baker/Malheur (Oregon)	24.6	20.3	0.7	—	6.0	14.8	—	1.2	—	43.0	—	—	1.0
Proposed Action Compared to Malheur S Alternative	Malheur (Oregon)	30.5	45.7	—	—	9.0	7.3	—	1.0	—	63.0	—	—	—

Route Name	County	Route Length (miles)	Non-highway, Other (miles)	Non-highway, Private (miles)	Non-highway, Forest Service (miles)	Non-highway, BLM (miles)	Non-highway, County (miles)	State Highway (miles)	US Highway (miles)	Interstate Highway (miles)	Total Roads (miles)	Railroads (miles)	Pipelines (miles)	Number of Bridges
Malheur S Alternative	Malheur (Oregon)	33.6	36.6	—	—	11.1	8.0	—	1.1	—	56.8	—	—	—
Proposed Action Compared to Malheur A Alternative	Malheur (Oregon)	30.5	45.7	—	—	9.0	7.3	—	1.0	—	63.0	—	—	—
Malheur A Alternative	Malheur (Oregon)	33.2	45.3	—	—	11.0	8.9	—	1.1	—	66.3	—	—	—
Proposed Action Compared to Double Mountain Alternative	Malheur (Oregon)	7.4	11.5	—	—	1.7	0.4	—	—	—	13.5	—	—	—
Double Mountain Alternative	Malheur (Oregon)	7.4	9.2	—	—	2.3	0.0	—	—	—	11.6	—	—	—

AIRPORTS, AIRSTRIPS, AND HELIPORT

Several airports, landing strips, and airstrips and one heliport occur within 3 miles of the Proposed Action and alternative. Table 3-135 lists these features and indicates the distance and direction of each facility from the proposed or alternatives.

Table 3-135. Public Airports, Landing Strips, and Heliports within 3 Miles of the Proposed Action and Alternatives

Milepost	Segment	County	Facility Type	Facility Name	Facility Use	Direction from Route	Distance from Route (miles) [1]
0 (start)	Proposed Action	Morrow (Oregon)	Heliport	PGE Boardman	Private	East	1.1
41.3	Proposed Action	Umatilla (Oregon)	Airport	West Buttercreek	Private	North	2.6
75.3	Proposed Action	Umatilla (Oregon)	Airport	Rugg Ranches	Private	Southwest	1.3
129.5	Proposed Action	Union (Oregon)	Airport	Pratt Ranch Airstrip	Private	Southwest	1.6
180.4	Proposed Action	Baker (Oregon)	Landing strip	Unknown	Unknown	Southwest	1.4
295.8	Proposed Action	Owyhee (Idaho)	Airport	Sunrise Skypark	Private	Northeast	2.4
26	Flagstaff Alternative, including 230-kV Rebuild	Baker (Oregon)	Airport	Baker City Municipal	Public	West	3.0
7.5	Timber Canyon Alternative	Union/Bake r (Oregon)	Airport	Boulder Park Resort Airstrip	Unknown	North	1.1

Table Source: Air transportation data from the Bureau of Transportation Statistics, Geographic Names Information System points and spatial datasets, and Tetra Tech aerial digitized landing strips.

Table Note: [1] Distances measured manually due to small number of locations within analysis area.

3.2.6.16 TRANSPORTATION ENVIRONMENTAL CONSEQUENCES

EFFECT INTENSITY CRITERIA

The criteria for assessing the intensity of effects to transportation are provided in Table 3-136.

Table 3-136. Transportation Effects Intensity Criteria

Intensity of Impacts	Description
High	• Areas of very high or high intensity of impact where the project would create a direct long-term conflict with existing transportation infrastructure.
Moderate	• Areas where the project would reduce the level of service (LOS) of a federal, state or county highway.
Low	• Areas where the project is in a designated (federal or local) utility corridor. • Areas where congestion or disruption of the use of transportation infrastructure would be short term and reversible.

Design Features

Appendix C identifies design features to reduce effects to transportation which, with other requirements of jurisdictional agencies, would be incorporated into the Records of Decision, right-of-way grants, and special use authorizations.

- TR-1—A Traffic and Transportation Management Plan will be developed, approved by the appropriate agency prior to the start of field activities, and implemented to provide site-specific details showing how the project will comply with the transportation environmental protection measures. This plan will be submitted to and approved by the appropriate federal, state, and local agencies with authority to regulate use of public roads, and approved, prior to the issuance of a Notice to Proceed with construction.
- TR-2—Dust suppression techniques will be applied, such as watering construction areas or removing dirt tracked onto a paved road as necessary to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates.
- TR-4—If a construction method requires the closure of a state- or county-maintained road, a traffic control plan will be developed to accommodate traffic as required by a county or state permit.
- TR-5—On county- and state-maintained roads, caution signs will be posted on roads, where appropriate, to alert motorists of construction and warn them of slow traffic. Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction to ensure safety and to minimize traffic congestion.
- TR-6—To reduce traffic congestion and roadside parking hazards, an equipment yard will be provided for primary parking for construction employee personal vehicles.
- TR-7—Unauthorized vehicles will not be allowed within the construction right-of-way during construction activities.
- TR-8—Construction vehicles on un-posted project roads will travel at speeds that are reasonable and prudent for the conditions.
- TR-9—All temporary culverts and associated fill material will be removed from stream crossings after construction, and banks will be re-contoured and restored to their pre-disturbance conditions.
- TR-10—Landowners in the project area will be notified prior to the start of construction.
- TR-11—Emergency vehicle access to private property will be maintained.
- TR-12—Roads in residential areas will be restored as soon as possible, and hazardous construction areas near residences will be fenced off at the end of the construction day.
- TR-13—Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.
- TR-14—Temporary construction roads developed specifically for the B2H Project that are identified as no longer necessary will be reclaimed as specified in the Reclamation, Revegetation, and Weed Management Plan.

- TR-15—Limit the number of vehicles on site to those necessary to perform, monitor, and inspect work.
- TR-16—Place "Wildlife Crossing" signage where applicable (e.g. near leks, brood-rearing habitat), to increase awareness of birds and wildlife in the area and encourage safe and responsible speeds. This may reduce direct loss due to vehicle collision.

TRANSPORTATION EFFECTS COMMON TO ALL ALTERNATIVES

This section describes the effects to transportation of the Proposed Action and the alternatives for the entire B2H Project area because the differences in effects between the alternatives and among the Project Segments are low. Where notable differences do exist, they are described in the text.

Table 3-134 summarizes the existing roads, railroads, pipelines, and bridges within 0.5 mile of the Proposed Action and alternatives by county. In addition, Table 3-137 lists the interstates, other highways or roads, railroads, and pipelines crossed by the Proposed Action and alternatives by county. Direct crossings of the existing transportation network by the B2H Project's Proposed Action or alternatives create the greatest potential for transportation impacts.

TRAFFIC IMPACTS

Table 3-138 shows the routes proposed to be used as haul routes to deliver construction materials to staging areas, the distance of the haul route and the average annual daily traffic (AADT) for the roads proposed to be used. Table 3-139 shows similar information for the routes proposed to be used for hauling water to staging areas. To facilitate the comparisons in each of these tables, each alternative is compared to the portion of the Proposed Action that starts and ends at the same points as the alternative. For the Proposed Action, most of the road miles traveled for construction crews and for delivering materials and water to the staging areas would be on highways with AADT above 1,000. The expected peak AADT of construction traffic is 51 trips per day, a smaller than 5% increase in traffic and therefore not a significant effect.

The most recently measured AADT for the Medical Springs Highway is 210 trips per day. Peak construction traffic impacts along the Timber Canyon Alternative route would constitute a 25% increase in traffic on Medical Springs Highway, and would therefore be moderate, but temporary during the construction period of the project in that area. Peak construction traffic would also create moderate temporary effects to traffic on Oregon Highway 206/207 along the Malheur S Alternative route, where AADT is approximately 310 trips per day.

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Table 3-137. Types of Transportation Facilities Crossed by Proposed Action and Alternative Routes

Route Name	County	Total Route Miles [1]	Non-highway—Other Road Crossings (miles) [2]	Non-highway—Private Road Crossings (miles) [2]	Non-highway—Service Road Crossings (miles) [2]	Non-highway—BLM Road Crossings (miles) [2]	Non-highway—County Road Crossings (miles) [2]	State Highway Crossings (miles) [3]	US Highway Crossings (miles) [3]	Interstate Highway Crossings (miles) [3]	Number of Railroad Crossings [4]	Number of Existing Pipeline Crossings [5]
Proposed Action	Morrow (Oregon)	46.8	35	—	—	—	—	5	—	—	2	2
Proposed Action	Umatilla (Oregon)	49.5	49	—	—	—	—	—	1	—	1	—
Proposed Action	Union (Oregon)	39.8	40	2	7	—	—	2	—	1	2	6
Proposed Action	Baker (Oregon)	69.2	45	6	—	9	15	2	—	1	3	16
Proposed Action	Malheur (Oregon)	72.0	86	—	—	18	10	—	2	—	1	—
Proposed Action	Owyhee (Idaho)	23.8	38	—	—	—	—	—	1	—	—	—
Proposed 138/69-kV Rebuild	Baker (Oregon)	5.3	4	2	—	1	1	—	—	1	1	2
	Proposed Action Total	306.4	297	10	7	28	26	9	4	3	10	26
Proposed Action and Alternative Route to Substation Comparisons												
Proposed Action Compare to Horn Butte Alternative	Morrow (Oregon)	34.1	23	—	—	—	—	2	—	—	2	2
Horn Butte Alternative	Morrow (Oregon)	27.5	17	—	—	—	—	2	—	—	2	2
Proposed Action Compare to Longhorn Alternative	Morrow (Oregon)	34.1	23	—	—	—	—	2	—	—	2	2
Longhorn Alternative	Morrow (Oregon)	18.4	15	—	—		—	—	1	1	2	3
Longhorn Variation	Morrow (Oregon)	22.4	18	—	—	—	—	—	1	1	1	4
Proposed Action and Alternative Route Comparisons												
Proposed Action Compare to Glass Hill Alternative	Union (Oregon)	7.5	5	—	—	—	—	—	—	—	—	4
Glass Hill Alternative	Union (Oregon)	7.5	5	—	—	—	—	—	—	—	—	—
Proposed Action Compare to Timber Canyon Alternative	Baker (Oregon)	46.3	25	6	—	8	9	2	—		2	4
Timber Canyon Alternative	Union/Baker (Oregon)	61.5	30	1	69	4	8	2	—	—	—	—
Proposed Action Compare to Flagstaff Alternative	Baker (Oregon)	14.2	8	3	—	3	1	2	—		—	2
Flagstaff Alternative including 230-kV Rebuild	Baker (Oregon)	15.1	10	4	—	1	—	3	—		—	2
Proposed Action Compare to Burnt River Mountain Alternative	Baker (Oregon)	16.8	10	—	—	4	7	—	—		2	2
Burnt River Mountain Alternative	Baker (Oregon)	16.8	14	5	—	5	5	—	—	2	3	2
Proposed Action Compare to Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.2	20	—	—	4	3	—	1		—	—
Tub Mountain South Alternative	Baker/Malheur (Oregon)	34.6	21	—	—	4	11	—	1		—	4
Proposed Action Compare to Willow Creek Alternative	Baker/Malheur (Oregon)	30.2	15	—	—	3	3	—	1	—	—	—
Willow Creek Alternative	Baker/Malheur (Oregon)	24.6	15	—	—	3	10	—	1	—	—	—
Proposed Action Compare to Malheur S Alternative	Malheur (Oregon)	30.5	35	—	—	13	7	—	1	—	—	—

Route Name	County	Total Route Miles [1]	Non-highway—Other Road Crossings (miles) [2]	Non-highway—Private Road Crossings (miles) [2]	Non-highway—Service Road Crossings (miles) [2]	Non-highway—BLM Road Crossings (miles) [2]	Non-highway—County Road Crossings (miles) [2]	State Highway Crossings (miles) [3]	US Highway Crossings (miles) [3]	Interstate Highway Crossings (miles) [3]	Number of Railroad Crossings [4]	Number of Existing Pipeline Crossings [5]
Malheur S Alternative	Malheur (Oregon)	33.6	17	—	—	2	5	—	1	—	—	—
Proposed Action Compare to Malheur A Alternative	Malheur (Oregon)	30.5	35	—	—	13	7	—	1	—	—	—
Malheur A Alternative	Malheur (Oregon)	33.2	25	—	—	2	6	—	1	—	—	—
Proposed Action Compare to Double Mountain Alternative	Malheur (Oregon)	7.4	8	—	—	2	—	—	—	—	—	—
Double Mountain Alternative	Malheur (Oregon)	7.4	6	—	—	2	—	—	—	—	—	—

Table General Note: Bridge numbers not added to this table because the transmission route does not intersect any bridges.

Table Notes: [1] Transmission Route Centerline Proposed Action and Alternate B2H_Routes_2012June. [2] BLM Oregon roads layer (broken down by classification and reported accordingly) and BLM Idaho roads layer (Idaho roads not classified—reported under "Other Road Crossings"); no new roads in the analysis area. [3] ESRI Interstate Highways road layer—east- and westbound lanes mapped in source layer—for analysis, one point collected for both lanes. Roads within the corridor were not changed. [4] Oregon Railroads layer 2009 (*no railroads in the Idaho section of the corridor*). No new railroads within the 1-mile analysis area. [5] Ventyx created pipeline data—generated June 2012 (only pipelines identified as "In Service" were used for the analysis). More detailed data found for this round of analysis which resulted in more sections crossed within the analysis area.

Table 3-138. Average Annual Daily Traffic Volumes near the Proposed Action and Alternative Routes

Route Name	Location [1]	Highway/Route Number [2]	Highway/Route Milepost [2]	Location Description [2]	2009 Average Annual Daily Traffic	2007 Average Annual Daily Traffic	2004 Average Annual Daily Traffic
Proposed—full length	Near Milepost (MP) 1 in Morrow County	I-84	159	0.30 mile west of Tower Road Interchange	10,900	Not available	10,800
Proposed—full length	Near MP 37 in Morrow County	I-84	183.16	0.30 miles east of Hermiston Highway (Oregon 207)	11,200	Not available	10,300
Proposed—full length	Near MP 37 in Morrow County	I-84	193.83	0.30 mile east of Lexington-Echo Highway	14,500	Not available	14,700
Proposed—full length	Near MP 73 in Umatilla County	U.S. 395	12.98	0.05 mile south of Stewart Creek	2,900	Not available	3,100
Proposed—full length	Near MP 107 in Umatilla County	I-84	253.43	0.60 mile east of Ukiah-Hilgard Highway (Oregon 244)	9,700	Not available	10,600
Proposed—full length	Near MP 107 in Union County	I-84	253.4	0.60 mile east of Ukiah-Hilgard Highway (Oregon 244)	9,700	Not available	10,600
Proposed—full length	Near MP 112 in Union County	I-84	260.27	North La Grande Automatic Traffic Recorder, Station 31-007, 1.05 miles east of La Grande–Baker Highway No. 66 (U.S. 30), North La Grande Interchange	8,500	Not available	8,900
Proposed—full length	Near MP 151 in Baker County	Medical Springs Highway No. 340	36.86	Medical Springs Automatic Traffic Recorder, Station 01-007, 2.08 miles east of Old Oregon Trail Highway No. 6 (I-84)	210	Not available	230
Proposed—full length	Near MP 189 in Baker County	I-84	327.83	0.40 miles south of Durkee Interchange	8,200	Not available	7,900
Proposed—full length	Near MP 243 in Malheur County	U.S. 20	200.96	0.5 miles east of Pole Creek Road	1,200	Not available	1,300
Proposed—full length	Near MP 243 in Malheur County	I-5	38.09	0.02 mile south of Wasco-Heppner Highway (OR206), Walnut Street	1600	Not available	1500
Proposed—full length	Near MP 198 in Malheur County	Oregon 201	8.02	0.06 miles south of Owyhee Avenue	1,200	Not available	1,300
Proposed—full length	Near MP 275 in Owyhee County	U.S. 95	29.4	Off of East Thompson Road	Not available	2,413	Not available
Proposed—full length	Near MP 299 in Owyhee County	Idaho 78	6	Off at Cemetery Lane	Not available	1,342	Not available
Horn Butte Alternative	Near MP 1 in Morrow County	I-84	159	0.30 mile west of Tower Road Interchange	10,900	Not available	10,800
Longhorn Alternative	Near MP 1 in Morrow County	I-84	159	0.30 mile west of Tower Road Interchange	10,900	Not available	10,800
Glass Hill Alternative	Near MP 1 in Union County	I-84	253.4	0.60 mile east of Ukiah-Hilgard Highway (Oregon 244)	9,700	Not available	10,600
Timber Canyon Alternative	Near MP 1 in Baker County	Medical Springs Highway No. 340	36.86	Medical Springs Automatic Traffic Recorder, Station 01-007, 2.08 miles east of Old Oregon Trail Highway No. 6 (I-84)	210	Not available	230
Timber Canyon Alternative	Near MP 1 in Baker County	I-84	327.83	0.40 mile south of Durkee Interchange	8,200	Not available	7,900
Flagstaff Alternative (including 230-kV Rebuild)	Near MP 1 in Baker County	Medical Springs Highway No. 340	36.86	Medical Springs Automatic Traffic Recorder, Station 01-007, 2.08 miles east of Old Oregon Trail Highway No. 6 (I-84)	210	Not available	230
Burnt River Mountain Alternative	Near MP 1 in Baker County	Medical Springs Highway No. 340	36.86	Medical Springs Automatic Traffic Recorder, Station 01-007, 2.08 miles east of Old Oregon Trail Highway No. 6 (I-84)	210	Not available	230
Willow Creek Alternative	Near MP 24 in Malheur County	U.S. 20	200.96	0.5 miles east of Pole Creek Road	1,200	Not available	1,300
Tub Mountain South Alternative	Near MP 34 in Malheur County	U.S. 20	200.96	0.5 miles east of Pole Creek Road	1,200	Not available	1,300
Malheur S Alternative	Near MP 1 in Malheur County	Oregon 206/ Oregon 207	49.44	0.01 mile west of Sand Hollow Road	310	Not available	370
Malheur A Alternative	Near MP 32 in Malheur County	I-84/Oregon 201	11.7	0.02 mile south of Succor Creek Road	1,300	Not available	1,400
Double Mountain Alternative	Near MP 243 in Malheur County	I-5	38.09	0.02 mile south of Wasco-Heppner Highway (OR206), Walnut Street	1,600	Not available	1,500

Table Sources: ITD, Average Daily Traffic, Highway Data Quest, 2009; ODOT, Traffic Flow Map, 2009.

Table Notes: [1] Milepost (MP) numbers refer to proposed transmission line mileposts. [2] Highway/route numbers, highway/route MP numbers, and locations refer to ITD (2009) and ODOT (2009) traffic data counter locations.

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Table 3-139. Major and Local Routes Used to Haul Water to Multiuse Areas for the Proposed Action and Alternative Routes

Route Name	County	Multiuse Area Number [1]	Anticipated Water Source	Major Routes	Local Routes
Proposed Action	Morrow (Oregon)	MO-1	Boardman	I-84	Tower Road (exit 159), Unnamed local roads
Proposed Action	Morrow (Oregon)	MO-2	Boardman	I-84, OR 207	OR 207, Dougherty Road
Proposed Action	Umatilla (Oregon)	UM-1	Boardman	I-84, I-82	County Road 1232 (exit 10)
Proposed Action	Umatilla (Oregon)	UM-2	Boardman	I-84	OR 207 (exit 182), Big Butter Creek Road
Proposed Action	Umatilla (Oregon)	UM-3	Pendleton	I-84, U.S. 395	Stewart Creek Road/Porter Road
Proposed Action	Union (Oregon)	UN-1	La Grande	I-84	OR 237 (exit 285), Coughanour Lane
Proposed Action	Baker (Oregon)	BA-1	Baker City	I-84	County Road 203 (exit 298)
Proposed Action	Baker (Oregon)	BA-2	Baker City	I-84	Vandecar Road (exit 327), Lang Road, Hindman Road
Proposed Action	Malheur (Oregon)	MA-1	Ontario	I-84, OR 201, U.S. 20, U.S. 26	Malheur Reservation Road
Proposed Action	Malheur (Oregon)	MA-2	Ontario	I-84, U.S. 20, U.S. 26, U.S. 95	Unnamed local road
Proposed Action	Malheur (Oregon)	MA-3	Nampa	I-84	OR 201, OR 452/ID 18, Mendiola Road, Owyhee Lake Road
Proposed Action	Malheur (Oregon)	MA-4	Nampa	I-84	OR 201, OR 452/ID 18
Proposed Action	Owyhee (Idaho)	OW-1	Nampa	U.S. 95	ID-19, South Stateline Road, Graveyard Point Road, Sage Road
Proposed Action	Owyhee (Idaho)	OW-2	Nampa	U.S. 95	ID-19, Drum Lane
Proposed Action	Owyhee (Idaho)	OW-3	Nampa	ID-55	ID-78, Clark Road, Coyote Grade Road
Proposed Action	Owyhee (Idaho)	OW-4	Nampa	ID-55	ID-78, Wilson Cemetery Lane
Proposed Action Compare to Horn Butte Alternative	Morrow (Oregon)	MO-1	Boardman	I-84	Tower Road (exit 159), Unnamed local roads
Proposed Action Compare to Horn Butte Alternative	Morrow (Oregon)	MO-2	Boardman	I-84, OR 207	OR 207, Dougherty Road
Horn Butte Alternative	Morrow (Oregon)	MO-1	Boardman	I-84	Tower Road (exit 159), Unnamed local roads

Route Name	County	Multiuse Area Number [1]	Anticipated Water Source	Major Routes	Local Routes
Horn Butte Alternative	Morrow (Oregon)	MO-2	Boardman	I-84, OR 207	OR 207, Dougherty Road
Proposed Action Compare to Longhorn Alternative	Morrow (Oregon)	MO-1	Boardman	I-84	Tower Road (exit 159), Unnamed local roads
Proposed Action Compare to Longhorn Alternative	Morrow (Oregon)	MO-2	Boardman	I-84, OR 207	OR 207, Dougherty Road
Longhorn Alternative	Morrow/Umatilla (Oregon)	MO-2	Boardman	I-84, OR 207	OR 207, Dougherty Road
Longhorn Alternative	Morrow/Umatilla (Oregon)	MO-3	Boardman	I-84, U.S. 730	Boardman Canal Road
Longhorn Alternative	Morrow/Umatilla (Oregon)	MO-4	Boardman	I-84	County Road 930 (exit 171), Poleline Road
Longhorn Alternative	Morrow/Umatilla (Oregon)	UM-1	Boardman	I-84, I-82	County Road 1232 (exit 10)
Proposed Action Compare to Timber Canyon Alternative	Union/Baker (Oregon)	BA-1	Baker City	I-84	County Road 203 (exit 298)
Proposed Action Compare to Timber Canyon Alternative	Union/Baker (Oregon)	BA-2	Baker City	I-84	Vandecar Road (exit 327), Lang Road, Hindman Road
Proposed Action Compare to Timber Canyon Alternative	Union/Baker (Oregon)	UN-1	La Grande	I-84	OR 237 (exit 285), Coughanour Lane
Timber Canyon Alternative	Union/Baker (Oregon)	BA-4	La Grande	I-84	OR 203 (exits 265, 298), Big Creek Road, Eagle Creek Road, National Forest Roads
Timber Canyon Alternative	Union/Baker (Oregon)	BA-5	Baker City	I-84	OR 86 (exit 302), Old Foothill Road, Sparta Lane
Timber Canyon Alternative	Union/Baker (Oregon)	BA-6	Baker City	I-84	OR 86 (exit 302), Dance Hall Road
Timber Canyon Alternative	Union/Baker (Oregon)	BA-7	Baker City	I-84	OR 86 (exit 302), Sass Road, Snake River Road
Timber Canyon Alternative	Union/Baker (Oregon)	BA-9	Baker City	I-84	Plano Road (exit 330), Unnamed local road
Timber Canyon Alternative	Union/Baker (Oregon)	UN-1	La Grande	I-84	OR 237 (exit 285), Coughanour Lane
Timber Canyon Alternative	Union/Baker (Oregon)	UN-2	La Grande	I-84	OR 203 (exits 265, 298)
Proposed Action Compare to Flagstaff Alternative	Baker (Oregon)	BA-1	Baker City	I-84	County Road 203 (exit 298)

Route Name	County	Multiuse Area Number [1]	Anticipated Water Source	Major Routes	Local Routes
Flagstaff Alternative including 230kV Rebuild	Baker (Oregon)	BA-1	Baker City	I-84	County Road 203 (exit 298)
Proposed Action Compare to Burnt River Mountain Alternative	Baker (Oregon)	BA-2	Baker City	I-84	Vandecar Road (exit 327), Lang Road, Hindman Road
Burnt River Mountain Alternative	Baker (Oregon)	BA-8	Baker City	I-84	Burnt River Canyon Lane, Old Oregon 30 East, Vandecar Road (exit 327)
Burnt River Mountain Alternative	Baker (Oregon)	BA-9	Baker City	I-84	Plano Road (exit 330), Unnamed local road
Proposed Action Compare to Tub Mountain South Alternative	Baker/Malheur (Oregon)	MA-1	Ontario	I-84, OR 201, U.S. 20, U.S. 26	Malheur Reservation Road
Tub Mountain South Alternative	Baker/Malheur (Oregon)	BA-3	Ontario	I-84	U.S. 30 (exit 353)
Tub Mountain South Alternative	Baker/Malheur (Oregon)	MA-7	Ontario	I-84, OR 201, U.S. 20, U.S. 26	5th Avenue East, Hill Road
Proposed Action Compare to Willow Creek Alternative	Baker/Malheur (Oregon)	MA-1	Ontario	I-84, OR 201, U.S. 20, U.S. 26	Malheur Reservation Road
Willow Creek Alternative	Baker/Malheur (Oregon)	BA-3	Ontario	I-84	U.S. 30 (exit 353)
Willow Creek Alternative	Baker/Malheur (Oregon)	MA-5	Ontario	I-84, OR 201, U.S. 20, U.S. 26	South Road L
Proposed Action Compare to Malheur S Alternative	Malheur (Oregon)	MA-2	Ontario	I-84, U.S. 20, U.S. 26, U.S. 95	Unnamed local road
Proposed Action Compare to Malheur S Alternative	Malheur (Oregon)	MA-3	Nampa	I-84	OR 201, OR 452/ID 18, Mendiola Road, Owyhee Lake Road
Proposed Action Compare to Malheur S Alternative	Malheur (Oregon)	MA-4	Nampa	I-84	OR 201, OR 452/ID 18
Malheur S Alternative	Malheur (Oregon)	MA-2	Ontario	I-84, U.S. 20, U.S. 26, U.S. 95	Unnamed local road
Malheur S Alternative	Malheur (Oregon)	MA-6	Nampa	I-84, U.S. 95	OR 201, unnamed local roads
Proposed Action Compare to Malheur A Alternative	Malheur (Oregon)	MA-2	Ontario	I-84, U.S. 20, U.S. 26, U.S. 95	Unnamed local road
Proposed Action Compare to Malheur A Alternative	Malheur (Oregon)	MA-3	Nampa	I-84	OR 201, OR 452/ID 18, Mendiola Road, Owyhee Lake Road
Proposed Action Compare to Malheur A Alternative	Malheur (Oregon)	MA-4	Nampa	I-84	OR 201, OR 452/ID 18

Route Name	County	Multiuse Area Number [1]	Anticipated Water Source	Major Routes	Local Routes
Malheur A Alternative	Malheur (Oregon)	MA-2	Ontario	I-84, U.S. 20, U.S. 26, U.S. 95	Unnamed local road
Malheur A Alternative	Malheur (Oregon)	MA-6	Nampa	I-84, U.S. 95	OR 201, unnamed local roads

Table Note: [1] See GIS data (B2H_MultiuseAreas_June2012.shp) for link to multiuse area site names and location. Data has attribute column with this information.

Operations effects on local traffic for the alternatives would be similar to those for the Proposed Action, infrequent and low. After construction is completed, IPC would work with the BLM, USFS, and Reclamation to identify new and improved construction roads that should be left open to become part of the agency road system, and those that should be closed either permanently or temporarily with gates or other barricades to prevent unauthorized access on public lands.

Access Road Construction and Improvements

All roads, other than state and federal highways and improved county roads, identified in the analysis area are considered to be project roads and part of the project "footprint" and are included in calculations of disturbed areas. State and federal highways and improved county roads are not considered project roads, and are not included in the disturbed area of the project. Project roads would be used during construction of the Proposed Action and alternatives. The project roads include those privately owned (e.g., ranch, power company, private-land access), as well as BLM, USFS, and county or other agency roads. Construction of the Proposed Action or alternative routes would require use of existing state and federal highways and improved county roads, and would require construction of some new roads and improvements to existing roadways to provide access for personnel, material, and equipment to the right of way, staging areas and helicopter fly yards. Many existing roads are generally low standard, may be single lane, and are often native surfaces that require improvement for project purposes. In situations where no existing roads provide access to an individual structural site or series of sites, a new roadway would be necessary.

In order to provide access for large construction equipment, IPC has identified minimum access road requirements for transmission line and substation construction and operation. A 14-foot-wide traveled way with curve widening of 16- to 20-feet would be used by the largest piece of equipment involved in construction. Section 1.5 of the Revised POD has additional information regarding IPC roadway standards (IPC 2011).

The critical vehicle for tower construction is an aerial lift crane. Figure 3-39 depicts a typical crane unit. To the maximum extent possible, IPC would use and improve existing roads, as necessary, to accommodate construction equipment.

Direct impacts associated with roadway improvements or new roadways required for the Proposed Action and alternative routes include additional cut-and-fill along the roadway. To the maximum extent possible, IPC would use and improve existing roads, as necessary, to accommodate construction equipment. Construction of new access roads would be limited to reduce the overall impact of road construction. Construction activities could conflict with road improvement projects. Complying with local permits and agreements would ensure appropriate coordination between IPC and the affected agencies and would help avoid or minimize conflicts.

Based on a preliminary facility layout, approximately 342 miles of existing roads would be improved and approximately 334 miles of new roads would be required for the Proposed Action. Table 3-140 presents a breakdown of these road miles for the Proposed Action by county and shows the miles of new roads and improvements needed for each alternative as compared to the proposed route segment the alternative would replace.

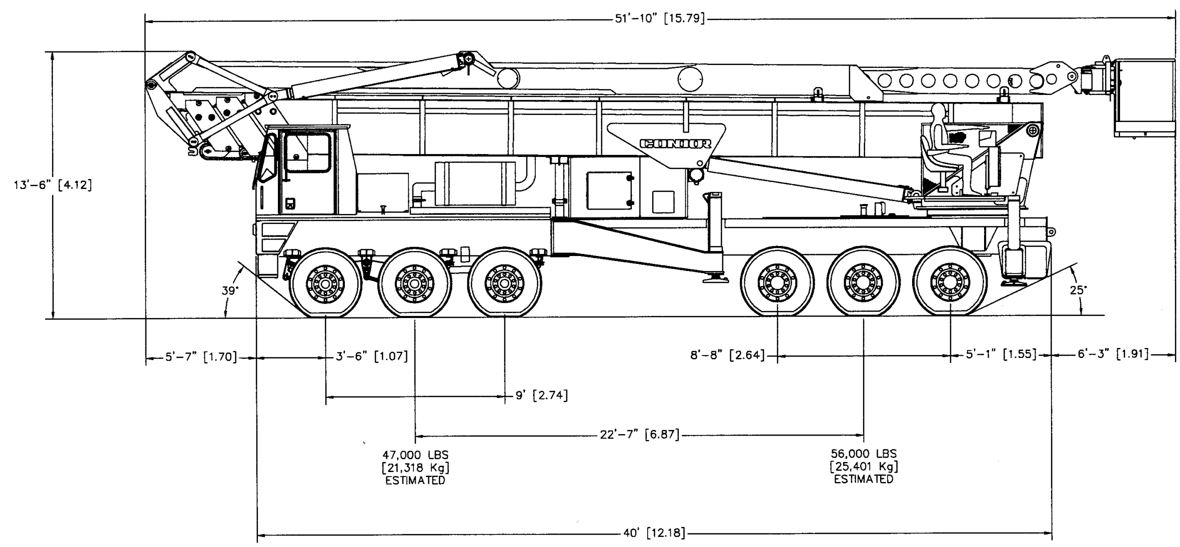


Figure 3-39. Example of Primary Equipment for Tower Construction (Condor 201S Aerial Lift Crane)

The localized direct and indirect effects of new road construction and road improvements for the Proposed Action would be high, but limited to the area of active construction and temporary during the period of construction at that location. The shorter Horn Butte and Longhorn Alternatives and the Longhorn Variation would require fewer miles of new road construction than the proposed B2H project, while the longer Timber Canyon Alternative would require 10 more miles of road improvements than the Proposed Action route segment that it would replace.

Table 3-140. Miles of New and Improved Access Roads

Route Name	County	Road Improvement Miles	New Road Miles	Total Miles
Proposed Action	Morrow (Oregon)	27.4	51.1	78.5
Proposed Action	Umatilla (Oregon)	43.1	60.1	103.2

Route Name	County	Road Improvement Miles	New Road Miles	Total Miles
Proposed Action	Union (Oregon)	40.9	37.2	78.1
Proposed Action	Baker (Oregon)	88.4	77.1	165.5
Proposed Action	Malheur (Oregon)	76.5	84.8	161.3
Proposed Action	Owyhee (Idaho)	62.4	20.0	82.4
Proposed 138/69-kV Rebuild	Baker (Oregon)	3.5	3.7	7.2
	Total Proposed Action	342.2	334.0	676.2
Proposed to Alternative Route Comparisons				
Proposed Action Compare to Horn Butte Alternative	Morrow (Oregon)	8.1	35.2	43.3
Horn Butte Alternative	Morrow (Oregon)	8.1	35.3	43.4
Proposed Action Compare to Longhorn Alternative and Longhorn Variation	Morrow (Oregon)	8.1	35.2	43.3
Longhorn Alternative	Morrow(Oregon)	21.5	18.0	39.5
Longhorn Variation	Morrow	13.5	16.4	29.9
Proposed Action Compare to Glass Hill Alternative	Union (Oregon)	6.2	8.9	15.1
Glass Hill Alternative	Union (Oregon)	14.8	8.4	23.2
Proposed Action Compare to Timber Canyon Alternative	Union/Baker (Oregon)	60.1	54.5	114.6
Timber Canyon Alternative	Union/Baker (Oregon)	98.8	64.4	163.2
Proposed Action Compare to Flagstaff Alternative	Baker (Oregon)	16.4	15.5	31.9
Flagstaff Alternative, including 230-kV Rebuild	Baker (Oregon)	17.0	14.5	31.5
Proposed Action Compare to Burnt River Mountain Alternative	Baker (Oregon)	27.5	18.4	45.9
Burnt River Mountain Alternative	Baker (Oregon)	21.7	15.0	36.7
Proposed Action Compare to Tub Mountain South Alternative	Baker/Malheur (Oregon)	43.2	46.8	90.0
Tub Mountain South Alternative	Baker/Malheur (Oregon)	19.2	38.4	57.6
Proposed Action Compare to Willow Creek Alternative	Baker/Malheur (Oregon)	39.4	42.7	82.1
Willow Creek Alternative	Baker/Malheur (Oregon)	22.4	32.0	54.4
Proposed Action Compare to Malheur (Oregon) S Alternative	Malheur (Oregon)	25.6	33.5	59.1
Malheur (Oregon) S Alternative	Malheur (Oregon)	53.1	49.1	102.2

Route Name	County	Road Improvement Miles	New Road Miles	Total Miles
Proposed Action Compare to Malheur (Oregon) A Alternative	Malheur (Oregon)	25.6	33.5	59.1
Malheur (Oregon) A Alternative	Malheur (Oregon)	56.3	40.9	97.2
Proposed Action Compare to Double Mountain Alternative	Malheur (Oregon)	1.2	9.1	10.3
Double Mountain Alternative	Malheur (Oregon)	5.2	11.9	17.1

Table General Note: Table generated using Pike roads layer Access_Roads_New_NeedsImprovement from Final_Dataset of the Pike_Miles_New_Improved_Roads.gdb.

Traffic Interruptions and Road Damage

B2H Project construction, particularly the installation of structures and the stringing of conductors, could affect the ground-transportation system. The direct effects of construction activities within rights-of-way of public roads and highways could include temporary road closures. In addition, truck delivery of large equipment and materials would require temporary road closures. Indirect effects could include road and bridge damage caused by vehicles and equipment (e.g., overhead-line cranes, concrete trucks, construction equipment, and material delivery trucks) when entering and leaving roads. Road-use permits or similar documents would require that construction contractors and IPC be responsible for rehabilitating or reconstructing roadways and structures during and after use. IPC has committed to preparing a detailed transportation plan to consider road conditions; wear and tear on roads, bridges, and stream crossings; traffic control; access control; post-construction repair; and reclamation.

Overhead construction activities could temporarily interfere with emergency services (fire, ambulance, police) access and response, especially at locations that may be temporarily blocked by the construction zone. Roadway segments most potentially affected are two-lane roadways that provide one lane of travel in each direction. IPC would coordinate in advance with emergency services, as well as with essential services such as post offices and school buses, as needed.

Substation construction associated with the B2H Project could cause temporary road and lane closures that could disrupt traffic flow or access and response by emergency-service providers. Construction activities could also disrupt pedestrian movement and safety on local roads, restrict access to properties, and damage local roads and bridges in the area. If construction requires an encroachment permit, the permit requirements would be specified by the jurisdictional agency; the permitting agency and IPC would be responsible for enforcing the terms of the permit.

IPC has prepared a Framework Traffic and Transportation Management Plan as Appendix L to the Revised POD. IPC's final Traffic and Transportation Management Plan and the requirements of state and county encroachment permits would provide measures to ensure that traffic disruptions and delays are minimized, and that damage to roads and bridges is repaired. IPC has committed to submitting the Traffic and Transportation Management Plan for approval by the appropriate federal, state, and local agencies before any Notice to Proceed is issued for construction. The Plan would ensure that B2H

Project trips are planned in accordance with existing road conditions. IPC would obtain permits that describe circulation and detour routes, lane closures, and other relevant factors. With implementation of an approved traffic and transportation management plan, traffic interruptions and road damage impacts would be moderate and short-term during construction of the proposed B2H Project.

Traffic Impacts to BLM and USFS Road Systems

As discussed above in the Regulatory Framework section, no hauling over oversized or over-weight loads, nor hauling of commercial or construction equipment on BLM or USFS roads is permitted without prior written authorization. The miles of new and improved roads anticipated to be needed for the Proposed Action and alternatives is based on preliminary indicative engineering for the purposes of estimating overall project impacts, and is subject to revision based on site-specific design (Table 3-140). In general, the improvement and use of BLM and USFS road systems during construction could adversely affect recreational and other uses of those roads, depending on where the roads are located and how and when they are used. IPC would work with the BLM and USFS to identify existing BLM and USFS roads that would be most suitable for construction access, and determine whether seasonal or other limitations on use are warranted to minimize road damage and interruption of non-construction related use.

Construction of new roads could benefit public access to areas previously inaccessible. However, additional access could result in indirect adverse effects to wildlife, vegetation and other resources. Potential adverse effects and mitigation measures are discussed in Vegetation (Section 3.2.3) and Wildlife (3.2.4).

A Traffic and Transportation Management Plan would be developed, approved by the appropriate agency prior to the start of construction, and implemented to provide site-specific details showing how the project would comply with the transportation Environmental Management Plans. This plan would be submitted to and approved by the appropriate federal, state, and local agencies with authority to regulate use of public roads, and approved, prior to the issuance of a Notice to Proceed with construction. In addition, the following measures would be implemented to reduce impacts to traffic:

- Dust suppression techniques would be applied, such as watering construction areas or removing dirt tracked onto a paved road as necessary to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates.
- If a construction method requires the closure of a state- or county-maintained road, a traffic control plan would be developed to accommodate traffic as required by a county or state permit.
- On county- and state-maintained roads, caution signs would be posted on roads, where appropriate, to alert motorists of construction and warn them of slow traffic. Traffic control measures such as traffic control personnel, warning signs, lights, and barriers would be used during construction to ensure safety and to minimize traffic congestion.
- To reduce traffic congestion and roadside parking hazards, an equipment yard would be provided for primary parking for construction employee personal vehicles.

- Unauthorized vehicles would not be allowed within the construction right-of-way during construction activities.
- Construction vehicles on un-posted project roads would travel at speeds that are reasonable and prudent for the conditions.
- All temporary culverts and associated fill material would be removed from stream crossings after construction, and banks would be re-contoured and restored to their pre-disturbance conditions.
- Landowners in the project area would be notified prior to the start of construction.
- Emergency vehicle access to private property would be maintained during construction and operation of the project.
- Roads in residential areas would be restored as soon as possible, and hazardous construction areas near residences would be fenced off at the end of the construction day.
- Existing roads negatively affected by construction and as identified by the agencies would be returned to preconstruction condition.
- Temporary construction roads developed for this project would be reclaimed as specified in the Reclamation, Revegetation, and Weed Management Plan.

With effective implementation of these measures, the overall impact to traffic caused by construction and improvement of roads in the project area would be moderate and temporary during project construction.

Traffic on Public Roads

Construction-related activities, such as construction-worker commute trips and the delivery and hauling of project equipment and materials would temporarily increase traffic (B2H Project trip generation) on the regional and local roadways. At any single location, this impact would be short term as crews work in an area and then move along the construction spread along the transmission line. The B2H Project would be conducted in areas of Idaho and Oregon that have light existing traffic volumes that are below the theoretical traffic capacity of the primary highways and local roads.

The proposed hauling routes for delivering materials to the B2H Project staging areas are shown in Table 3-138. Also shown in Table 3-138 is the AADT data for the roads proposed to be used to deliver materials to the staging areas for the proposed B2H Project. The most recent figures show AADT ranging from 14,500 trips per day on I-84 near Boardman to 210 trips per day on Medical Springs Highway No. 203. The anticipated peak daily trips for transmission line construction (51) along Medical Springs Highway would be more noticeable, an approximate 25 percent increase in daily traffic during construction in that area of the project.

Table 3-141 and Table 3-142 show that the average daily traffic generated by the B2H Project would be approximately 154 personal vehicle trips per day and approximately 90 construction vehicle trips per day for each portion of the proposed transmission line. Project-generated traffic would be lower at the substations.

Worker-generated traffic would occur primarily in the early morning and late afternoon, while general deliveries would likely occur throughout the day. All workers would be expected to obey local speed limits and traffic restrictions, and local and state law enforcement agencies would enforce traffic regulations as they normally would throughout the B2H Project area. The traffic impacts of the Proposed Action and alternatives would be localized and short-term during the construction period and would therefore be moderate.

Project operations would not cause emergency-access restrictions, increase roadway hazards, or cause damage to existing roads and bridges due to the infrequency of travel to the project site.

Table 3-141. Personal Vehicle Trips per Day during Construction

Construction Crew Type	Number of Personal Vehicles (per day)	Number of One-Way Trips on Public Roads (per day)	Total One-Way Trips (per day)
Material delivery	0	0	0
Right-of-way clearing	4	2	8
Road/pad grading	4	2	8
Foundations	5	2	10
Tower lacing	24	2	48
Tower setting	12	2	24
Stringing	13	2	26
Mechanic	1	2	2
Refueling	2	2	4
Dust control	2	2	4
Construction inspection	2	2	4
Concrete testing	2	2	4
Environmental compliance	4	2	8
Surveyors	2	2	4
Total			154

Table Source: Pike Engineering 2012 data, based on construction segment spanning three multiuse areas.

Table 3-142. Construction Vehicle Trips per Day

Construction Crew Type	Number of Pickups/ Mechanic Trucks (per day)	Number of One-Way Trips on Public Roads (per day)	Total One-Way Trips (per day)	Number of Other Vehicles	Number of One-Way Trips on Public Roads (per day)	Total One-Way Trips (per day)
Material delivery	9	8	72	4	6	24
Right-of-way clearing	2	2	4	2	4	8
Road/pad grading	2	4	8	2	4	8

Construction Crew Type	Number of Pickups/ Mechanic Trucks (per day)	Number of One-Way Trips on Public Roads (per day)	Total One-Way Trips (per day)	Number of Other Vehicles	Number of One-Way Trips on Public Roads (per day)	Total One-Way Trips (per day)
Foundations	4	2	8	8	3	24
Tower lacing	12	2	24	0	0	0
Tower setting	12	2	24	0	0	0
Stringing	6	4	24	4	4	16
Mechanic	1	6	6	0	0	0
Refueling	2	6	12	0	0	0
Dust control	0	0	0	1	10	10
Construction inspection	2	8	16	0	0	0
Concrete testing	2	4	8	0	0	0
Environmental compliance	4	8	32	0	0	0
Surveyors	2	6	12	0	0	0
Total			250			90

Table Source: Pike Engineering 2012 data, based on construction segment spanning three multiuse areas.

Railroads and Pipelines

Impacts on railroads or pipelines are not anticipated because construction activities would not be performed on railroad right-of-ways or near pipelines.

Airports, Airstrips, and Heliport

Project construction activities such as transporting construction laborers and delivering equipment and materials to structure sites; structure placement; hardware installation; and wire-stringing operations may be facilitated by helicopters. The construction specifications would allow the option of using ground-based or helicopter construction methods, or a combination. Various factors such as access to structure locations, the construction schedule, and construction economics would determine whether helicopters are used for structure erection. If helicopters are used, helicopter construction activities would be based at a fly yard (a project material staging area). The fly yards would be sited to permit a maximum fly time of 4 to 8 minutes to reach structure locations.

Two of the airports mentioned during scoping are located in the analysis area. The Baker City airport is 0.8 mile west of the Proposed Action and the La Grande airport is 2.3 miles northeast of the Flagstaff Alternative. Construction equipment is not high enough to interfere with these or other airport or heliport facilities. Construction of the Proposed Action and the alternatives would not affect airports, heliports, or airstrips.

Civilian air-traffic patterns would not be affected by the placement of new structures or conductors because the B2H Project would not violate vertical obstruction prohibitions. Annual aerial inspection of the transmission line would be conducted by helicopter and would require two or three crew members, including the pilot. Helicopter flights associated with B2H Project operations may affect airports, public and private, and heliports near the B2H Project (Table 3-135). These flights may occur within the controlled zones throughout the analysis area. All flight operations are FAA controlled. Impacts could include increased traffic load at these airports, though this impact is expected to be short-term and negligible because B2H Project operations would require only a few flights per year.

Access Road Use and Maintenance

After project construction, existing and new permanent access roads would be used by maintenance crews and vehicles as service roads for inspection and maintenance activities. Temporary construction roads not required for future maintenance access would be restored after the completion of project construction. IPC would restore temporarily disturbed areas as closely as practical to original contours and would use certified weed-free seed mixes and cover materials. Temporary construction roads developed for the B2H Project would be reclaimed as specified in the Reclamation, Revegetation, and Weed Management Plan. Roads retained for operations would be scarified and seeded with an appropriate seed mix and allowed to revegetate. Roads that are the responsibility of IPC to maintain would be maintained to have crossroad drainage to minimize the amount of channeling or ditches needed. Water bars would be installed at all alignment changes (curves), significant grade changes, and as requested by the federal or state agency. IPC would comply with the road maintenance standards of the federal or state agency controlling the land. For normal maintenance activities, an 8-foot-wide portion of the road would be used, and vehicles would drive over the vegetation. For nonroutine maintenance requiring access by larger vehicles, the full width of the access road may be used. Access roads would be repaired, as necessary, but not routinely graded. Vegetation (e.g., taller shrubs and trees) that may interfere with the safe operation of equipment would be managed on a cyclical basis.

Detailed ground inspections of the entire transmission line system would take place annually using four-wheel-drive trucks or all-terrain vehicles. IPC may occasionally conduct maintenance on the system using live-line maintenance with equipment as large as the aerial lift crane illustrated in Figure 3-39. Most maintenance activities would be performed when the line is de-energized. Project maintenance would slightly increase the number of trips. If major maintenance and repair work would require lane restrictions, roadway closures, or both, emergency access to private properties would be maintained.

The BLM and other agencies are concerned that improvements to existing roads and construction of new access roads would result in increased public land use by providing new access points for vehicles, particularly off-highway vehicles. Potential effects of unauthorized use of B2H Project access roads are discussed in Recreation (this section).

Any railroad overhead utility crossings would conform to the National Electrical Safety Code to prevent impacts during operations. Project activities would not interfere with railway or pipeline operations.

With effective implementation of temporary disturbance reclamation and maintenance of permanent project access roads, the long-term adverse effects of the access roads would be low.

3.2.7 Visual Resources

3.2.7.1 Introduction

The term "visual resources" refers to the composite of basic terrain, geologic, and hydrologic features, vegetative patterns, and built features that influence the visual appeal of a landscape. This section describes the existing context of the visual environment and assesses the potential impacts from the construction and operation of the Proposed Action and alternatives within the analysis area.

3.2.7.2 Regulatory Framework

There are several applicable regulations, policies, and procedures that pertain to visual resources as well as the construction and operations of the Proposed Action. The Council on Environmental Quality regulations for implementing National Environmental Policy Act (NEPA) identify aesthetic effects as a type of impact to be addressed in a review under NEPA, and state that EISs should include discussion of the design of the built environment (40 CFR 1502.16, 1508.8). The regulations also require discussion of possible conflicts of a proposed action with the objectives of federal, regional, state, local, and tribal land use plans and policies; federal land use plans, in particular, typically include guidance for management of visual resources. The Council on Environmental Quality regulations do not include more specific direction about aesthetic impact issues to be considered or means to evaluate aesthetic impacts.

Federal regulations for right-of-way grants under the Federal Land Policy and Management Act (43 CFR 2800) focus on administrative and procedural aspects of the grants. The BLM must further require compliance with the terms and conditions of the grant to control or prevent damage to "(i) Scenic, aesthetic . . . values…" per 43 CFR 28 2805.12(i)(3)(i).Regulations pertaining to special-use permits on USFS lands primarily address administrative and procedural aspects of the permit process, although guidance on permit terms and conditions includes the requirement that such authorizations must minimize damage to scenic and esthetic values (36 CFR 251.56). Both BLM and USFS consideration of visual resource issues associated with special-use permits is generally based on the visual resource provisions of standard BLM and USFS policies and procedures for land use planning and NEPA compliance.

The BLM and the USFS have developed formal systems to inventory visual resources on the lands under their jurisdiction, evaluate visual change in the landscape, and manage visual resources under their jurisdiction. In contrast, formal guidelines for managing visual resources on other federally managed lands and the private, state, and municipal lands found within the visual analysis area are not established. Visual resource management approaches for the respective jurisdictions are discussed below.

Federal Lands

Federal lands within the analysis area primarily include lands managed by the BLM and the USFS, with some acreage under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS), the Bureau of

Reclamation (Reclamation), and the U.S. Department of Defense. The visual resource management direction applied to the lands under the jurisdiction of each agency is summarized below.

Bureau of Land Management

The BLM uses the Visual Resource Management (VRM) System to classify and manage visual resources on lands under its jurisdiction. The VRM System involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). The BLM's VRM System incorporates scenic quality, viewer sensitivity, and distance zones to identify visual resource inventory (VRI) classes. These classes represent the relative value of the existing visual landscape, as well as the visual resource baseline from which to measure impacts that a proposed project may have on these values. In its planning process, the BLM weighs visual and competing resource values and designates the VRM classes, with associated management class objectives for a given area's visual setting. The assignment of one of four VRM classes (Table 3-143) becomes an important component of the BLM's resource management plan (RMP) for the area. The various VRM class objectives and the VRI scenic quality, sensitivity levels, and classes for the analysis area are illustrated in Mapbook 1 of Appendix B.7.Table 3-144 shows the miles of project components associated with the Proposed Action and alternatives that cross each VRM component.

Table 3-143. BLM Visual Resource Management Class Objectives

VRM Class	Management Objective
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Table Source: BLM 1986.

1 **Table 3-144. BLM and USFS Visual Resource Inventory Information and Management Objectives for the Proposed Action and Alternatives**

	Proposed Action (miles)	Horne Butte Alt (miles)	Longhorn Alt (miles)	Longhorn Variation (miles)	Glass Hill Alt (miles)	Timber Canyon Alt (miles)	Flagstaff Alt (including 230-kV Rebuild) (miles)	Burnt River Mountain Alt (miles)	Tub Mountain South Alt (miles)	Willow Creek Alt (miles)	Double Mountain Alt (miles)	Malheur S Alt (miles)	Malheur A Alt (miles)
BLM Baker Field Office (Oregon)													
VRM Class—II	—	—	—	—	—	5.03	—	—	—	—	—	—	—
VRM Class—III	1.31	—	—	—	—	0.19	—	0.29	—	—	—	—	—
VRM Class —IV	16.4	—	0.03	—	0.41	0.60	0.27	4.21	3.17	3.89	—	—	—
Scenic Quality Class—A	—	—	—	—	—	—	—	—	—	—	—	—	—
Scenic Quality Class—B	6.91	—	—	—	—	—	0.27	1.56	—	—	—	—	—
Scenic Quality Class—C	10.80	—	0.03	—	0.41		—	2.94	3.17	3.89	—	—	—
Sensitivity Level—High	17.71	—	0.03	—	0.41	5.82	0.27	4.50	1.63	0.47	—	—	—
Sensitivity Level—Moderate	—	—	—	—	—	—	—	—	1.54	3.42	—	—	—
Sensitivity Level—Low	—	—	—	—	—	—	—	—	—	—	—	—	—
BLM Malheur Field Office (Oregon)													
VRM Class—II	1.58	—	—	—	—	—	—	—	—	—	—	2.31	1.85
VRM Class—III	4.62	—	—	—	—	—	—	—	7.13	0.87	—	2.53	2.53
VRM Class —IV	44.34	—	—	—	—	—	—	—	14.82	6.59	7.39	26.38	28.11
Scenic Quality Class—A	0.05	—	—	—	—	—	—	—	—	—	—	1.56	1.06
Scenic Quality Class—B	8.74	—	—	—	—	—	—	—	0.61	—	—	6.98	5.76
Scenic Quality Class—C	41.76	—	—	—	—	—	—	—	21.34	7.45	7.39	23.94	24.40
Sensitivity Level—High	0.68	—	—	—	—	—	—	—	—	—	—	4.37	3.57
Sensitivity Level—Moderate	34.24	—	—	—	—	—	—	—	14.09	0.48	6.51	24.85	24.39
Sensitivity Level—Low	15.61	—	—	—	—	—	—	—	7.86	6.97	0.88	3.26	3.26
BLM Owyhee Field Office (Idaho)													
VRM Class—II	—	—	—	—	—	—	—	—	—	—	—	—	—
VRM Class—III	3.00	—	—	—	—	—	—	—	—	—	—	—	—
VRM Class —IV	16.56	—	—	—	—	—	—	—	—	—	—	—	—
Scenic Quality Class—A	—	—	—	—	—	—	—	—	—	—	—	—	—
Scenic Quality Class—B	0.01	—	—	—	—	—	—	—	—	—	—	—	—
Scenic Quality Class—C	19.54	—	—	—	—	—	—	—	—	—	—	—	—
Sensitivity Level—High	—	—	—	—	—	—	—	—	—	—	—	—	—
Sensitivity Level—Moderate	13.02	—	—	—	—	—	—	—	—	—	—	—	—
Sensitivity Level—Low	6.53	—	—	—	—	—	—	—	—	—	—	—	—
USFS Wallowa-Whitman National Forest													
VQO—Retention	1.08	—	—	—	—	0.38	—	—	—	—	—	—	—
VQO—Partial Retention	4.18	—	—	—	—	3.25	—	—	—	—	—	—	—

	Proposed Action (miles)	Horne Butte Alt (miles)	Longhorn Alt (miles)	Longhorn Variation (miles)	Glass Hill Alt (miles)	Timber Canyon Alt (miles)	Flagstaff Alt (including 230-kV Rebuild) (miles)	Burnt River Mountain Alt (miles)	Tub Mountain South Alt (miles)	Willow Creek Alt (miles)	Double Mountain Alt (miles)	Malheur S Alt (miles)	Malheur A Alt (miles)
VQO—Modification	0.43	—	—	—	—	13.22	—	—	—	—	—	—	—
VQO—Maximum Modification	—	—	—	—	—	2.76	—	—	—	—	—	—	—
Variety Class—A	—	—	—	—	—	—	—	—	—	—	—	—	—
Variety Class—B	5.69	—	—	—	—	19.36	—	—	—	—	—	—	—
Variety Class—C	—	—	—	—	—	0.25	—	—	—	—	—	—	—
Level of Sensitivity—1	4.70	—	—	—	—	2.23	—	—	—	—	—	—	—
Level of Sensitivity—2	0.57	—	—	—	—	2.66	—	—	—	—	—	—	—
Level of Sensitivity—3	0.43	—	—	—	—	14.71	—	—	—	—	—	—	—

Table Source: Logan Simpson Design.

Table Abbreviations: Alt = Alternative; VQO = visual quality objective; VRM = Visual Resource Management.

The analysis stage of the VRM process involves assessing and disclosing the potential visual impacts from proposed activities (NEPA compliance) and then determining whether such impacts will meet the management objectives established for the area (plan conformance). To analyze and mitigate potential visual impacts associated with proposed activities, the BLM uses guidelines described in BLM Handbook H-8431-1, Visual Resource Contrast Rating (BLM 1986). The degrees of contrast determined from selected key observation points, or places where users tend to congregate, are categorized in a range including none, weak, moderate, or strong—where strong indicates a proposed activity will create contrast that demands attention, will not be overlooked, and is dominant in the landscape. Factors to be considered when applying the contrast criteria include distance, angle of observation, length of time the project activities is in view, relative size or scale, season of use, light conditions, recovery time, spatial relationships, atmospheric conditions, and motion.

The analysis area overlaps with the geographic boundaries of the BLM Spokane, Prineville, Vale, and Boise Districts. The review of area-specific BLM planning direction for visual resources applies to the Spokane District, the John Day Basin in the Prineville District, the BLM Baker and Malheur Resource Areas in the Vale District, and the Owyhee and Cascade Resource Areas in the Boise District. As such, the following BLM RMPs have been reviewed for visual resource management direction on the Proposed Project:

- Spokane RMP/Record of Decision (ROD; BLM 1987b)
- John Day Basin Proposed RMP and Final EIS (BLM 2012)
- Baker RMP (BLM 1989)
- Southeastern Oregon RMP, includes the Malheur Resource Area (BLM 2002)
- Owyhee RMP (BLM 1999)
- Cascade RMP (BLM 1987a)

Management direction for visual resources documented within the BLM plans applicable to the analysis area is summarized below.

Spokane District

The BLM issued the current Spokane District RMP in 1985 and adopted that plan through a Record of Decision issued in 1987. With respect to visual resources, the RMP indicates that visual resources would continue to be evaluated as a part of activity and project planning. The document does not discuss specific areas with high scenic values and does not indicate where VRM classes have been designated to lands within the District (BLM 1985). Similarly, the Record of Decision indicates that recreational activities and visual resources will be evaluated as part of specific activity plans and will be evaluated in relation to land use allocations made in the RMP and does not indicate where VRM classes have been designated(BLM 1987b).

In 2010, the BLM initiated a planning process to develop a new management plan for the BLM-administered lands in the Spokane District and the San Juan Islands of Washington. A background document prepared in support of that planning process explains that visual resource inventory and management classes need to be determined for all Spokane District BLM-administered lands, because this information has not been updated since a management framework plan was developed in 1982 and much of the plan's documentation has been lost (BLM 2011). When an RMP fails to establish VRM classes, the BLM either uses any established by a prior Land Use Plan or interim classes are establish based on the current RMP's 'management intent' for a particular landscape.

Prineville District, John Day Basin

The John Day Basin Proposed RMP and Final EIS was completed March 2012 and covers the eastern portion of the Prineville District (BLM 2012). The RMP planning area encompassed over 5 million acres and was previously being managed under three separate plans. The current RMP was completed in 1995, and this Proposed RMP incorporates new information and regulatory guidance as well as providing updated management direction to resolve land use issues or conflicts. One of the goals of the Proposed RMP is to protect the quality of scenic values and most of the planning area is classified as VRM Class II. However, the BLM–administered lands within the analysis area are proposed to be VRM Class III. In the absence of VRM class decisions in the prior RMPs for this area, BLM must assign interim VRM classes, and it can base these classes on the current Proposed Plan direction.

Vale District, Baker Resource Area

BLM-administered lands in the Baker Resource Area of the Vale District include portions of Umatilla, Union, and Baker Counties. The BLM Vale District issued the current RMP for the Baker Resource Area in 1989. The RMP provides direction for a wide range of resource topics, including visual resources (BLM 1989). In general, the RMP guidance for visual resources is to emphasize management of visual resources in selected areas of high visitor use and/or high visual quality. The Grande Ronde and Powder Rivers were determined to be suitable through the Oregon Omnibus Bill and were designated by Congress into the Wild and Scenic River system in the late 1980's. Subsequently, a River Management Plan was developed for each river as per regulations with those plans being completed in 1993/1994, which appended the 1989 Baker RMP and includes the protection of high scenic values. In addition, the RMP states that activities that will result in significant, long-term adverse effects will not be permitted in areas of high scenic quality such as the Burnt River, Powder River, or Snake River canyons (BLM 1989). Activities in other areas of high visual quality might be permitted if they do not attract attention or leave long-term visual changes on the land. The RMP assigns nearly 152,000 acres of the Baker Resource Area (35 percent of the total acreage) to VRM Class II, in which management activities can be seen but cannot attract attention of a casual observer from any travel route. No areas within the Baker Resource Area were designated to VRM Class I within the analysis area. Approximately 17 per cent was to be managed for VRM Class III, and the majority of the Baker Resource Area (48 percent) was to be managed for VRM Class IV.

Vale District, Malheur Resource Area

Public lands in Malheur County are administered by the Vale District of the BLM. Both the Malheur and Jordan Resource Areas cover lands in Malheur County. The Malheur Resource Area is located in northern Malheur County (lands north of Jordan Valley, Oregon) and the Jordan Resource Area is located south of Jordan Valley, Oregon. The BLM Vale District issued the Southeastern Oregon RMP and Final EIS in 2001 to provide management direction for the Malheur and Jordan Resource Areas of the Vale District. The Project analysis area includes a considerable portion of the Malheur Resource Area and none of the Jordan Resource Area.

The Southeastern Oregon RMP (BLM 2001c) identifies nine planning issues to be addressed in the planning process, summarizes existing conditions within the planning area, discusses management direction for the respective resources within the plan alternatives under consideration, and assesses the resource impacts that would result from the respective alternatives. Areas with special management direction for resource protection purposes are to be managed as VRM Class I or II. Overall, approximately 309,796 acres in the Malheur Resource Area (15 percent of the total acreage) are to be managed as VRM Class I and 144,403 acres (7 percent of the total) are to be managed as VRM Class II. The remainder of the resource area is to be managed as VRM Class III (199,078 acres) and Class IV (1,365,457 acres) (BLM 2001 ROD).

Boise District, Owyhee Resource Area

BLM-administered lands in Owyhee County, Idaho, are located at the southeastern end of the analysis area, within the Owyhee Resource Area of the Boise District. The Owyhee RMP (BLM 1999) includes separate sections addressing objectives, management actions, and allocations for a range of resources and management considerations. Approximately 71,332 acres (6 percent of the total acreage) are to be managed as VRM Class I, and 242,150 acres (18 percent) are to be managed as VRM Class II. The RMP also allocates 123,000 acres to VRM Class II-IMP; these are wilderness study areas considered to be non-suitable for wilderness designation that will be managed as VRM Class II unless or until released from wilderness consideration by Congress, in which case they would be managed as VRM Class IV. The majority of the Owyhee Resource Area is managed as Class IV areas (738,228 acres/56 percent), and the remaining 144,785 acres or 11 percent as Class III.

Boise District, Cascade Resource Area

Some BLM-administered lands located in Idaho along the Snake River are within the analysis area. These lands are currently managed by the Four Rivers Field Office of the Boise District. The current RMP applicable to these lands is the RMP for the Cascade Resource Area, which BLM issued in 1987. BLM initiated development of a new Four Rivers RMP in 2008; that planning process is still underway.

The Cascade RMP (BLM 1987a) indicates that guidelines for visual resource management are to consider the scenic values of public lands whenever any physical actions are proposed on BLM-administered lands, and that the degree of alterations to the natural landscape will be guided by the VRM management classes and criteria. The plan states that objectives for visual resource management are to protect the scenic values of the public lands and to manage specific lands within the resource area under VRM Classes II (81,000 acres), III (383,466 acres), and IV (23,000 acres); no lands are allocated to VRM Class I. The Class II designation applies to a continuous band of lands along the eastern side of Brownlee and Oxbow reservoirs. This classification corresponds to an area designated elsewhere in the plan as the Oxbow-Brownlee Special Recreation Management Area (SRMA).

U.S. Forest Service

The analysis area overlaps with the geographic boundaries of the Wallowa-Whitman and Umatilla National Forests. Neither the Proposed Action nor any alternatives would cross lands within the Umatilla National Forest, but some Umatilla National Forest lands fall within the analysis area.

The USFS originally implemented a Visual Management System (VMS) in 1974 to inventory, evaluate, and manage lands for visual resource values, as described in Chapter 1 of the *National Forest Landscape Management* handbook (USFS 1974).In 1995, the visual resource management guidelines and monitoring techniques evolved into the Scenery Management System (SMS), as described in *Landscape Aesthetics: A Handbook for Scenic Management* (USFS 1995). While the overall visual resource framework is similar between the two systems, the terminology within the SMS has been modified slightly, and it also provides more complete science because it incorporates assessment of biological, physical, and social/cultural resources within a geographic area.

The Wallowa-Whitman National Forest and Umatilla National Forest Land and Resource Management Plans (LRMPs) were published in 1990 and therefore use the former VMS provisions and classifications. The VMS combines scenic quality, viewer sensitivity, and distance zones to develop visual quality objectives (VQOs). VQOs are assigned to the landscape to describe the degree of acceptable alteration of the natural landscape (Table 3-145).Each VQO indicates the acceptable degree of landscape change by classifying lands in one of five categories: Preservation, Retention, Partial Retention, Modification, or Maximum Modification. Preservation allows for ecological changes only, while Maximum Modification allows for landscape changes that may dominate the natural landscape character. Mapbook 1 (Appendix B.7) illustrates the various VQO class objectives and the variety class and level of sensitivity for the analysis area. Table 3-144 shows the miles of project components associated with the Proposed Action and alternatives that cross each VMS component.

Table 3-145. USFS Visual Resource Objectives (Visual Management System)

Objective	Visual Quality Objectives
Preservation	Management activities are generally not allowed in this setting. The landscape is allowed to evolve naturally.
Retention	This visual quality objective provides for management activities which are not visually evident. Under retention activities may only repeat form, line, color, and texture which are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
Partial Retention	Management activities remain visually subordinate to the characteristic landscape when managed according to the partial retention visual quality objective. Activities may repeat form, line, color, or texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc. ,remain visually subordinate to the characteristic landscape.
Modification	Management activities may visually dominate the original characteristic landscape. However, activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area of character type.

Objective	Visual Quality Objectives
Maximum Modification	Management activities may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background. Management activities of vegetative and landform alteration may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middleground, they may not appear to completely borrow from naturally established form, line, color, or texture.

Table Source: USFS 1995.

Unlike the VMS, the SMS is integrated with ecosystem management and addresses landscape character, constituent preferences, scenic integrity, and landscape visibility as key aesthetic considerations. Landscape character describes the visual patterns of form, line, color, texture, dominance, scale, and diversity of elements in the landscape and the cultural attributes that make the landscape identifiable and give it a "sense of place." Constituent preferences convey the aesthetic experience of National Forest visitors, communities, and tourists and the significance of scenic quality to these user groups. Scenic integrity refers to the level of intactness of (or, conversely, the degree of deviation from) the existing or desired landscape character. Scenic integrity levels (SILs) are classified as "very high," "high," "moderate," "low," and "very low" and are used in much the same way as VQOs (Table 3-146).

Table 3-146. USFS Scenic Integrity Levels (Scenery Management System)

Level	Scenic Integrity Levels
Very High	Management activities, except for very low visual-impact recreation facilities, are prohibited. Allows for ecological changes only. The existing landscape character and sense of place is expressed at the highest possible level.
High	Management activities are not visually evident to the casual observer. The landscape character appears intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident. Changes in the qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
Moderate	This objective refers to landscapes where the valued landscape character "appears slightly altered." Noticeable deviations must remain visually subordinate to the landscape character being viewed
Low	This objective refers to landscapes where the valued landscape "appears moderately altered." Deviations begin to dominate the valued landscape character being viewed, but they borrow valued attributes such as size, shape, edge effect and pattern of natural openings, vegetation type changes, or architectural styles outside the landscape being viewed. Attributes should not only appear as valued character outside the landscape being viewed, but compatible or complimentary to the character within
Very Low	This objective refers to landscapes where the valued landscape character "appears heavily altered." Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes such as size, shape, edge effect, and the landscape being viewed. However, deviations must be shaped and blended with the natural terrain landforms) so elements such as unnatural edges, roads, landings, and structures do not dominate the composition.

Table Source: USFS 1995.

Wallowa-Whitman National Forest Land and Resource Management Plan

With respect to visual resources, the Wallowa-Whitman National Forest LRMP (USFS 1990a) indicates that "Management of the Forest's visual resources is emphasized within the viewsheds of federal and state highways and major Forest roads. The visible land areas adjacent to selected travel routes are managed for a variety of VQOs including Retention, Partial Retention and Modification." The Plan establishes a goal for landscape management to "manage all National Forest lands to obtain the highest possible visual quality, commensurate with other appropriate public uses, costs and benefits."

The VQOs prescribed within the Wallowa-Whitman National Forest are defined by and apply only to lands within the denoted management areas. Each management area has a specific resource emphasis and management objective guidelines to provide protection to the resource. The Proposed Project traverses several areas that have overlapping management areas. The LRMP states that within the selected acreages where management areas overlap, the VQOs that provide the highest level of visual quality protection take precedence. For 12 of the 17 management areas, the landscape management prescription is to manage according to forest-wide standards and guidelines. The landscape direction for the other 5 management areas references VQOs, as applicable to specific areas. These specific areas are Management Area (MA) 4, Wilderness; MA 5, Phillips Lake Area; MA 6 Backcountry, MA 7 Wild and Scenic Rivers, and MA 8 Hells Canyon National Recreation Area Snake River Corridor.

Umatilla National Forest Land and Resource Management Plan

The Umatilla National Forest LRMP (USFS 1990b) documents forest management direction, and addresses visual resource management as a subset of recreation. Of the 25 management areas within this LRMP, MAs A3 Viewshed 1 and A4 Viewshed 2 address the "seen area" from specific viewing platforms where forest visitors have a major concern for the scenic quality of the landscape.MA A3 Viewshed 1 identifies 13 viewsheds from primary travel routes, use areas, or water bodies where forest visitors would have major concern for naturally appearing landscape. These viewsheds have been assigned Retention and Partial Retention VQOs for the foreground and middleground distance zone areas, respectively. MA A4 Viewshed 2 identifies 17 viewsheds from viewing platforms where forest visitors would have major concern for naturally appearing to slightly altered landscape. Seen areas within MA A4 Viewshed 2 have been assigned Partial Retention and Modification VQOs for the foreground and middleground distance zone areas, respectively. Management areas that specifically reflect a visual resource emphasis for Retention include MA A6 Developed Recreation, MA A7 Wild and Scenic Rivers, MA A8 Scenic Area, MA A9 Special Interest Area, MA B1 Wilderness, MA C1 Dedicated Old Growth, and MA D2 Research Natural Area. The visual resource direction for most of the other management areas specifies a range of VQOs as applicable to specific sites areas.

Department of Defense

The U.S. Navy administers the Naval Weapons Systems Training Facility Boardman(U.S. Navy 2012a).The Navy has not developed a comprehensive plan for the training facility that is comparable to the BLM and USFS management plans. In compliance with the Sikes Act, however, the Navy developed and implemented an integrated natural resources management plan for the facility (U.S. Navy 2012b). Specific management direction for visual resources associated with the training facility has not been established.

Bureau of Reclamation

Federal lands within the analysis area that are under the jurisdiction of the Reclamation includes a small portion of the Owyhee River canyon in Malheur County, Oregon. This area consists of federal project lands associated with Owyhee Dam and Reservoir, which are operated by Reclamation. The current management direction for this area is contained in the Owyhee RMP (Reclamation 1994). There are other Reclamation property interests in Morrow and Union counties in Oregon and Owyhee County, Idaho.

The Owyhee RMP direction for visual resources consists of general policy statements and does not include site- or area-specific prescriptions. The RMP identifies a goal to "Preserve, protect and enhance scenic resources," and objectives to "minimize development in areas that would impact special scenic or wilderness characteristics" and to "maintain primitive, undeveloped character of landscape" (Reclamation 1994:6-13). Associated management guidelines and actions address facility design, removal of trash dumps and other restoration actions, and aesthetic requirements to be applied to leaseholders.

U.S. Fish and Wildlife Service

The USFWS manages three national wildlife refuges that are partially or entirely located within the Project analysis area. They are the Umatilla National Wildlife Refuge (NWR) in Morrow County, the McKay Creek NWR in Umatilla County, and the Deer Flat NWR in multiple counties of southwestern Idaho and southeastern Oregon. The primary mission of the USFWS as manager of the National Wildlife Refuge System is to provide valuable habitat for fish and wildlife. Various types of recreation are allowed or provided on many refuges—to the extent they are compatible with the purposes of a specific refuge.

The Umatilla NWR Comprehensive Conservation Plan (USFWS 2007) does not prescribe management for visual resources or address visual resource conditions. Therefore, management direction for visual resources associated with the Umatilla NWR has not been established.

The McKay Creek NWR includes 1,837 acres within and adjacent to McKay Creek Reservoir. The USFWS recently initiated a process to develop a Comprehensive Conservation Plan for the refuge. Based on the limited documentation available to date, management direction for visual resources associated with the McKay Creek NWR has not been established.

The Deer Flat NWR includes approximately 11,000 acres within two refuge units. The Lake Lowell Unit consists of approximately 9,000 acres surrounding Lake Lowell, a reservoir located west of Nampa in Canyon County, Idaho (USFWS 2012). The remaining acreage is within the Snake River Islands Unit and is distributed among more than 100 islands within a long reach of the Snake River from near Walter's Ferry in Idaho to Farewell Bend near Huntington, Oregon. The USFWS has issued a variety of public information materials but has not released a draft plan. Based on the planning documentation available to date, management direction for visual resources associated with the Deer Flat NWR has not been established.

Confederated Tribes of the Umatilla Indian Reservation

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) is within the Proposed Action analysis area. The Reservation is located in varied terrain with panoramic landscapes that includes broad agricultural plains as well as enclosed landscapes that include rounded mountainous terrain with incised drainages. In the CTUIR's 2010 Comprehensive Plan, there are no specific references made to visual resources or objectives identified for visual resource management. However, the Plan did established objectives "… to protect, preserve, and perpetuate the CTUIR's culturally significant places and resources for the benefit of current and future generations" (CTUIR 2010). The protection and preservation of the landscape setting of culturally significant places can be inferred as important to CTUIR based on these Plan objectives.

State Lands

There are no lands within the analysis area owned by the State of Washington. The State of Idaho does own lands that fall within the analysis area in Owyhee County. Lands within the analysis area that are owned by the State of Oregon are managed by the Oregon Department of Transportation, the Oregon Parks and Recreation Department (OPRD), and the Oregon Department of Fish and Wildlife (ODFW). Lands administered by the Oregon Department of Transportation are within highway rights-of-way and are managed for transportation purposes. The lands administered by Oregon Parks and Recreation Department and Oregon Department of Fish and Wildlife are somewhat more extensive and varied; the types of management designations and resource management approaches under the jurisdiction of these agencies are summarized below.

Oregon Energy Facility Siting Council

The Oregon energy facility siting law was established in 1971 to regulate nuclear and coal-fired generating plants within the state with generating capacities of 200 megawatts or larger. Revised siting laws in 1975 lead to the creation of the Energy Facility Siting Council, which is responsible for regulating and siting large-scale electric generating facilities, high voltage transmission lines, and radioactive waste sites. The intent of the Council is to provide state-level oversight of energy facilities to ensure that the state strikes a balance between having an adequate amount of energy, protecting the environment, and ensuring public safety.

Oregon Parks and Recreation Department

The mission of the Oregon Parks and Recreation Department is to provide and protect outstanding natural, scenic, cultural, historic and recreational sites for the enjoyment and education of present and future generations (OPRD 2012a). The Department's resources within the analysis area include six separate parcels of the Blue Mountain Scenic Byway located along Interstate 84 (I-84) and the Old Oregon Trail Highway. These parcels extend from Deadman's Pass Rest Area in Umatilla County south to Spring Creek in Union County. The corridor protects one of the few examples of undisturbed, mature evergreen forests along I-84 and is composed of intermittent stands of old-growth ponderosa pine, western larch, Engelmann spruce, lodgepole pine, and grand fir (OPRD 2012a). Hilgard Junction State Park, located in Union County 8 miles west of La Grande at the intersection of I-84 and Oregon State Highway 244 near the Grande Ronde River, also lies within the analysis area. This park offers recreational opportunities and tent camping sites along the Grande Ronde River (OPRD 2012b).

OPRD operates three park units in within the eastern part of the analysis area in Oregon. Farewell Bend State Recreation Area is located 3 miles southeast of Huntington in Baker County, along the west bank of the Snake River's Brownlee Reservoir. Lake Owyhee State Park, located 33 miles southwest of Nyssa in Malheur County, includes two campgrounds and a day-use area with a boat ramp. Succor Creek State Natural Area located approximately 20 miles south of Adrian in Malheur County includes an unstaffed, no-fee primitive camping area with 67 sites.

The Oregon Parks and Recreation Department has prepared master plans for a number of state park system units. The list of draft and completed park master plans available on the Department's website does not include any of the four park units within the analysis area. Based on the planning documentation available to date, management direction for visual resources associated with these parks has not been established.

Oregon Department of Fish and Wildlife

The Oregon Department of Fish and Wildlife manages state wildlife areas primarily to provide wildlife habitat, with recreational use as an incidental benefit in some locations. Five state wildlife areas are located within the analysis area, including Coyote Springs Wildlife Area in Morrow County; Ladd Marsh Wildlife Area in Union County; Elkhorn Wildlife Area is located in Union and Baker counties; Snake River Islands Wildlife Area in Malheur County; and Rogers Wildlife Area is a small property of roughly 100 acres located in Malheur County. Public use for wildlife-oriented recreation is permitted in all of these wildlife areas, with some use restrictions based on type of use, geographic extent, and/or season. Management plans are available for the Columbia Basin Wildlife Areas (including Coyote Springs; ODFW 2008a); the Elkhorn Wildlife Area (ODFW 2006), and the Ladd Marsh Wildlife Area (ODFW 2008b). The management plans focus on habitat and wildlife management and do not address management for visual resources.

Other Managed Visual Resource Programs

Scenic and Back Country Byways

The National Scenic Byways Program is part of the U.S. Department of Transportation, Federal Highway Administration. Established in Title 23 USC Section 162 under the Intermodal Surface Transportation Efficiency Act of 1991, the program was developed to help recognize, preserve, and enhance selected roads throughout the United States by recognizing certain roads as National Scenic Byways or All-American Roads based on their intrinsic qualities (Table 3-147).To be designated a National Scenic Byway, a road must possess characteristics of regional significance within at least one of the intrinsic qualities. All-American Roads must possess characteristics of national significance in at least two of the intrinsic qualities. Scenic byways can qualify for Federal Highway Administration funding under two programs-Federal Lands Access Program or the Federal Lands Transportation Program in which the federal agencies along with the state department of transportation and counties compete for funding. Details on funding as enacted in the Moving Ahead for Progress in the 21st Century Act (Public Law 112-141), MAP-21, can be found here: http://www.fhwa.dot.gov/map21/.America's Byways is the umbrella term used for the collection of the 150 distinct and diverse roads currently designated by the U.S. Secretary of Transportation.

Table 3-147. National Scenic Byway Program Intrinsic Qualities Description

Intrinsic Quality	Description
Archaeological	Archaeological Quality involves those characteristics of the scenic byways corridor that are physical evidence of historic or prehistoric human life or activity that are visible and capable of being inventoried and interpreted.
Cultural	Cultural Quality is evidence and expressions of the customs or traditions of a distinct group of people. Cultural features including, but not limited to, crafts, music, dance, rituals, festivals, speech, food, special events, vernacular architecture, etc., are currently practiced.
Historic	Historic Quality encompasses legacies of the past that are distinctly associated with physical elements of the landscape, whether natural or manmade, that are of such historic significance that they educate the viewer and stir an appreciation for the past. The historic elements reflect the actions of people and may include buildings, settlement patterns, and other examples of human activity.
Natural	Natural Quality applies to those features in the visual environment that are in a relatively undisturbed state. These features predate the arrival of human populations and may include geological formations, fossils, landform, water bodies, vegetation, and wildlife.
Recreational	Recreational Quality involves outdoor recreational activities directly association with and dependent upon the natural and cultural elements of the corridor's landscape. The recreational activities provide opportunities for active and passive recreational experiences.
Scenic	Scenic Quality is the heightened visual experience derived from the view of natural and manmade elements of the visual environment of the scenic byway corridor. The characteristics of the landscape are strikingly distinct and offer a pleasing and most memorable visual experience.

Table Source: Federal Highway Administration 1995:26761.

Initiated in 1989, BLM Back Country Byways are roads that have been designated by the agency as scenic byways; many through remote country that provides solitude and spectacular scenery. These roads may also be National Scenic Byways. Each backcountry byway is classified into one of four category types based on the vehicles that can traverse it (Table 3-148).

Individual states have also developed programs to recognize and manage outstanding scenic routes as well as other qualities similar to the National Scenic Byways Program. The Idaho Transportation Department was designated by the Governor as the lead agency responsible for administering the Idaho Scenic Byways Program to meet the requirements of the Intermodal Surface Transportation Efficiency Act of 1991.The Oregon Scenic Byways Program was also created as an opportunity for Oregon to take advantage of the national program defined under this act. The Oregon Program includes two categories of routes, scenic byways and tour routes. Oregon scenic byways include outstanding scenic roads that accommodate most travelers and must be minimally 30 miles in length. Tour routes are minimally 20 miles in length with unique regional features or points of interest that draw people out of their vehicle and may have some form of limited drivability (Oregon Scenic Byways Program1995).

Table 3-148. BLM Back Country Byways Category Types

Type	Description
Type I	Roads are paved or have an all-weather surface and have grades that are negotiable by a normal touring car. These roads are usually narrow, slow speed, and secondary roads.
Type II	Roads require high-clearance type vehicles such as trucks or 4-wheel drives. These roads are usually not paved, but may have some type of surfacing. Grades, curves, and road surface are such that they can be negotiated with a 2-wheel-drive high clearance vehicle without undue difficulty.
Type III	Roads require 4-wheel-drive vehicles or other specialized vehicles such as dirt bikes, all-terrain vehicles (ATVs), etc. These roads are usually not surfaced, but are managed to provide for safety considerations and resource protection needs.
Type IV	Trails that are managed specifically to accommodate dirt bike, mountain bike, snowmobile, or ATV use. These are usually single track trails.

Table Source: BLM 2004.

Within the analysis area there is one designated All American Road, one national scenic byway, five state scenic byways, one tour route, and one backcountry byway (Table 3-149; Figure 3-40; Mapbook 2 of Appendix B.7).The Hells Canyon, Blue Mountain, Elkhorn, and Journey Through Time scenic byways, and Grande Tour Route are part of the Oregon Scenic Byways Program as well as the Wallowa-Whitman National Forest Scenic Byways. Some portions of different byways overlap and share segments of the same routes, e.g., the Snake River Mormon Based Back Country Scenic Byway overlaps with a portion of the Hells Canyon Scenic Byway along Oregon Route 86. Hells Canyon Scenic Byway is a 208-mile-long All American Road along portions of Oregon Routes 86 and 82 within the analysis area whose route takes motorists along the 8,000 foot deep Hells Canyon and the 10,000 foot peaks of the Wallowa Mountains. The Blue Mountain Scenic Byway (Oregon Route 74 within the analysis area) is a 145-mile-long alternative route to I-84 between Arlington and Baker providing glimpses of the pioneer history of the area as well as spectacular scenery. The winding 106-mile loop of the Elkhorn Scenic Byway follows U.S. Route 30 and Forest Road 73 within the analysis area and encircles the Elkhorn Mountains and passes by abandoned gold mines and ghost towns. Following a 100-mile segment of the “Wild and Scenic” John Day River, the Journey Through Time Scenic Byway (Oregon Route 7 within the analysis area) is a 285-mile-long route that provides opportunities for motorist to view many aspects of Oregon pioneer life and well-preserved fossil records of plant and animals dating back 54 million years ago. The 80-mile-long Grande Tour Route climbs across mountains and open valleys and overlooks the Ladd Marsh Wildlife Refuge using Oregon Routes 82, 203, and 237 within the analysis area. A high clearance vehicle is needed to travel the entire route of BLM’s Snake River-Mormon Basin Back Country Byway in northeast Oregon. It forms a 150-mile-long loop drive beginning and ending in Baker City along portions of Oregon Routes 7 and 86 within the analysis area.

In Idaho, the 53-mile-long Snake River Canyon Scenic Byway crosses a sagebrush-covered valley rich in early settlement history using Idaho Route 45 and local roads within the analysis area. It also crosses the Deer Flat NWR. The Western Heritage Historic Byway is a 40-mile route along the Snake River in Idaho and is a designated national scenic byway. The analysis area also includes a small portion of the Lewis and Clark Trail Scenic Byway along Washington Route 14, which is over 570 miles in length and parallels the Columbia River.

Table 3-149. Scenic and Back Country Byways within Analysis Area

Scenic/Back Country Byway	Intrinsic Qualities	Corridor Management Objectives	Corridor Management Proposed Enhancement Projects
Blue Mountain Scenic Byway (Oregon)	Scenic, historic, and recreational	• Provide long lasting economic support for local communities along the route • Assist in enhancing the production of outdoor recreation opportunities • Link people and resources through a natural and historical journey	No projects identified in the byway's 2004 Corridor Management Plan.
Elkhorn Scenic Byway (Oregon)	Scenic, historic, natural, and recreational	• Increase public understanding and appreciation for the Nation's environment, history, and culture. • Reveal a modern working forest steeped in history	No projects identified in the 1994 Scenic Byway Management Plan.
Grande Tour Route (Oregon)	Scenic, historic, and natural	• Strengthen local economies • Build a bridge between urban and rural residents • Preserve and maintain the area's history • Provide opportunities for education	• Interpretive signs • Marketing strategy
Hells Canyon All American Road (Oregon)	Scenic, natural, historic, and recreational	• Showcase the unique, diverse and outstanding scenery in Northeast Oregon • Stimulate the local economies of Northeast Oregon in all seasons • Upgrade and improve public land facilities • Maintain the remote and rugged character significant of the rural lifestyle • Develop the byway around the interpretive themes	No projects identified in the byway's 2004 Corridor Management Plan.

Scenic/Back Country Byway	Intrinsic Qualities	Corridor Management Objectives	Corridor Management Proposed Enhancement Projects
Journey Through Time Scenic Byway (Oregon)	Scenic, natural, and historic	• Serve to enhance and protect the valuable heritage resources along the unique corridor • Provide a source of economic vitality for the region • Create jobs • Maintain rural lifestyles • Protect important values • Build identity for the North Central Region	No projects identified in the byway's 1996 Management Plan.
Lewis and Clark Trail Scenic Byway (Washington)	Scenic, natural, historic, cultural, and recreational	• Leave a lasting legacy of improvements • Enhance visitors' experience • Encourage development of plans and projects that are consistent with the values and perspectives of tribes and local communities along the trial route • Relate the significance of and provide interpretation about the Lewis and Clark Expedition to people of the Pacific Northwest, the nation, and the world.	• Priority Bicentennial Projects in the vicinity of analysis area: • #3 Sacajawea State Park and Interpretive, Tri-Cities • #8b Lewis and Clark Discovery Trail/Pacific County Phase • #9 Confederated Tribes of Umatilla Homelands Project, Umatilla and Morrow counties, Oregon and Southeast Washington • #15c Sacagawea Heritage Trail and related sites, Tri-Cities • #20 Wanapum Replica Village, Tri-Cities area
Snake River Canyon Scenic Byway (Idaho)	Scenic, natural, archaeological, cultural, and recreational	• To continually improve the byway experience for all visitors • To provide diverse and interesting sites and information that offer quality experiences • To offer all visitors an appreciation and understanding of the historic, cultural recreation, scenic, natural, and archaeological stories along the byway	Key site improvements were identified at Walter's Ferry, Pump Road Overlook, Map Rock Interpretive Site, cities of Marsing, Greenleaf, Wilder, Caldwell, Nampa, and Homedale, rural farm stands and farmers' market, vineyards and wineries, Hops Fields and City of Wilder, Old Fort Boise Replica and City of Parma, Fort Boise Wildlife Management Area.
Snake River-Mormon Basin Back Country Byway (Oregon)	Scenic, natural, recreational, and historic	• Maintain scenic values • Encourage tourism as a way to diversify local governments economic base • Promote use and enjoyment of recreation area	Additional signage

Scenic/Back Country Byway	Intrinsic Qualities	Corridor Management Objectives	Corridor Management Proposed Enhancement Projects
Western Heritage Historic Byway (Idaho)	Scenic, natural, and historic	• To preserve, enhance, and showcase select geologic, wildlife, scenic, historic, cultural and recreational resources along the byway, while respecting local residents and lifestyles. • To attract local, regional, national, and international visitors to southwest Idaho to enjoy rewarding and memorable experiences of the people and places along the byway. • To provide visitor services that consider access, safety, and convenience for people of all ages. • To maintain the byway's unique cooperative partnership of local, state, private, and federal agencies in implementing byway improvements.	• Projects identified in 2004 Western Heritage Historic Byway Western Heritage Historic Byway Corridor Management Plan: • Byway Orientation Portal • Kuna/Indian Creek Visitor Center • Snake River Birds of Prey National Conservation Area (BPNCA) Pullout • Initial Point • Snake River BPNCA/Dedication Point • Pioneer Cemetery/15-Mile Station • Kuna Cave • Snake River BPNCA/Three Pole • Swan Falls Dam • Celebration Park • Melba Loop • Silver Trail

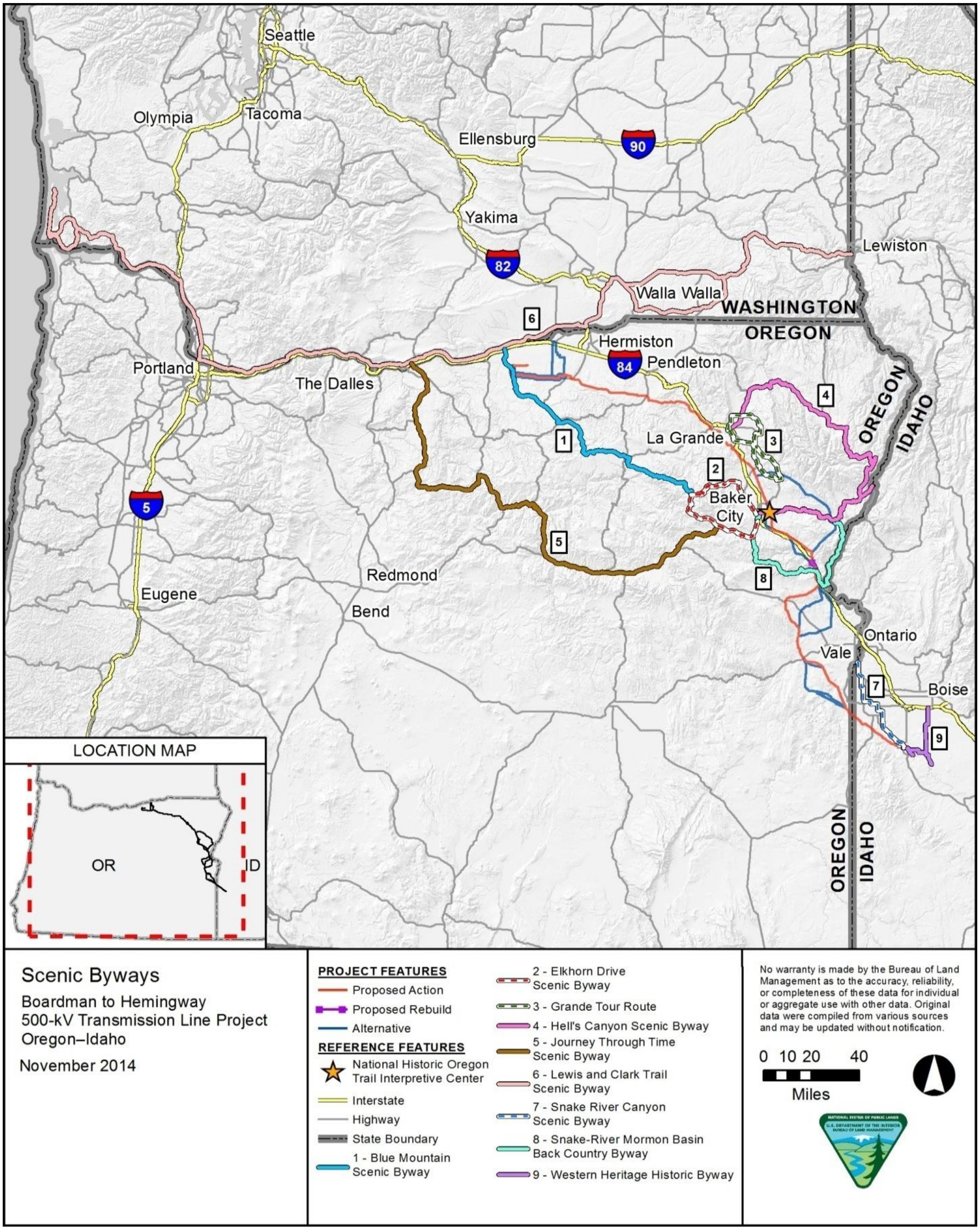


Figure 3-40. Scenic and Back Country Byways

National Historic Trails

The B2H Project analysis area includes approximately 311 miles of the designated Oregon National Historic Trail, Lewis and Clark National Historic Trail, and the Goodale's Cutoff and Meek Cutoff study trails. Refer to Section 3.2.9 of the EIS for a description of the trails.

Wild and Scenic Rivers

Refer to Section 3.2.6.2 of the EIS for a description of the designated Wild and Scenic rivers within the analysis area.

Local Government Lands

Counties and incorporated communities collectively own a small acreage of land within the analysis area, most of which is associated with public facilities, utility operations, and open space areas that these entities provide for their residents. The analysis area for this report includes all county and municipal lands where the proposed transmission line would be located, as well as nearby counties and municipalities within a 5-mile radius of the proposed transmission line. Review of county and municipal comprehensive plans for the respective jurisdictions indicates the plans provide overall management direction for these local government lands, but do not prescribe management direction specific to visual resources.

Private Lands

Private lands crossed by the Proposed Action or an alternative route are not subject to the visual resource management standards that federal or state land management agencies would apply. Private lands within the analysis area are subject to land use regulation of the respective local government jurisdiction (i.e., county or municipality) within which they are located. As noted above, review of local government land use plans applicable to the potential transmission line locations confirms that these local governments have not established visual resource management systems for the private lands under their jurisdiction. While local zoning ordinances typically include regulatory provisions that relate to aesthetic/visual concerns, such as height limitations for structures, the local governments do not classify private lands according to their visual resource attributes and do not prescribe levels of visual quality that must be maintained in specific locations.

3.2.7.3 Issues Identified for Analysis

Issues related to visual resources were raised by the public, Native American Indian tribes and federal and state agencies during scoping. The following list summarizes the issues identified during scoping, as well as the issues that must be considered as required by applicable laws or regulations.

- Would scenic views be impacted by the electrical towers?
- How would the construction of the transmission line impact visual resources near the Oregon National Historic Trail and the Interpretive Center?
- How would the project affect designated scenic byways?
- Does the project conform to existing federal visual resource management objectives?

3.2.7.4 Methodology

The methodology used to analyze the impacts to visual resources from the construction and maintenance of the Proposed Action and alternatives followed three primary steps: 1) establishing existing visual character and inherent scenic quality and identifying locations where people commonly view the landscape, 2) assessing the change to the landscape and the effects on views from key locations, and 3) determining compliance with resource management objectives.

The inventory and analysis of the visual environment was completed regardless of jurisdiction or land ownership. The character of the existing visual resources in the analysis area varies because of the different natural and man-made features or elements in the landscape and the diverse patterns that these elements, when combined, create. Scenic or visual quality is the visual appeal of a landscape. The landscape is measured in terms of its distinctiveness (or memorability), scarcity, and variety of the landform, vegetation, water, color, adjacent scenery, and man-made features and how well these features fit together. The visual character and inherent scenic quality were evaluated using visual analysis units. Each unit has similar landforms, vegetation, land use, or man-made patterns and features, or contains water features such as rivers and lakes.

In addition to establishing the existing visual character and scenic quality, identifying locations where people view the landscape was also important. The phrases ‘sensitive viewing platforms’ or ‘key observation points’ refer to public areas within the analysis area where the Proposed Action and alternatives could be visible. These platforms are typically roads or trails that people commonly travel, places they go for recreation, or where they live or work in addition to where views of special features are seen. Any areas that were considered to have scenic values as one of the resources identified to consider them as Special Management Areas were also identified and the views from these areas evaluated. Conducting a visibility analysis to knowing where the Proposed Action and alternatives could be seen was also part of the visual resource inventory component of the analysis.

Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. An analysis of visual dominance, scale, and contrast was used in determining to what degree the Proposed Action and alternatives would attract attention and to assess the relative change in character as compared to the existing characteristic landscape and its inherent scenic quality. The amount of visual contrast created is directly related to the amount of attention that is drawn to a feature in the landscape. In addition, changes in the viewsheds from sensitive viewing locations were evaluated and characterized.

The third step in the analysis of visual impacts was the determination of compliance of USFS and BLM’s visual resource management objectives where the Proposed Action and alternatives would cross these federally administered lands. The potential impact to the scenic byways and National Historic and study trails are also addressed in this section.

The following paragraphs provide a more detailed description of the methodology to complete the project-level inventory of existing visual conditions and analysis the potential impacts from the Proposed Action and alternatives. This methodology was developed in consultation with BLM and USFS visual resource specialists.

Analysis Area

The analysis area for visual resources is defined as the area within approximately 5 miles from either side of the Proposed Action and alternatives' centerlines(10 miles total), and includes all ancillary facilities related to the proposed project. The analysis area includes portions of southwestern Idaho and eastern Oregon including sections of Gilliam, Morrow, Umatilla, Union, Baker, Washington, and Malheur counties in Oregon and Owyhee County in Idaho. The most southern end of Benton County near the Columbia River in Washington is also part of the analysis area.

Landscape Character

The existing landscape character is described for the analysis area by delineating visual analysis units (VAUs) (Figure 3-41a to Figure 3-41h). Where available, these project-level units were based on the BLM VRI scenic quality rating units (SQRUs), taking into account USFS landscape character units to the degree possible for USFS lands (BLM 2013). With the exception of the area within the Baker Field Office, VAUs were delineated using the existing SQRU delineations from the BLM VRI completed in 2013 for the Owyhee and Malheur Field Offices (LSD 2013). For the Baker Field Office, the VAUs are delineated similarly as the other field offices but do not follow the numbering system specific to the Baker Field Office VRI. The VAU/SQRU delineations are based on areas with common landforms patterns and features, vegetation communities and patterns, built features, land use patterns, scarcity, and/or surface water resources. The ecoregion in which the unit generally falls—Columbia Plateau, Blue Mountains, Northern Basin and Range, or Snake River Plain is also noted.

The VAUs, as described in Appendix B.7, define the existing visual character and condition of the analysis area. Each VAU has a unique identifier that includes two letters and three numbers. The letters refer to the BLM field office in which the unit lies. The numbers correspond to the BLM VRI SQRU numbers except for the Baker Field Office as noted above. The VAUs are grouped by BLM field office and are listed in numerical order within each field office. The descriptions are separated into landform and vegetation elements and include additional information regarding the general degree of enclosure, views, land use, ownership, cultural modifications, adjacent scenery, scarcity, VRI sensitivity level, and identified sensitive viewing platforms/KOPs. This information was compiled for review of the distinct elements and to provide for consistent evaluation of the landscape in the impact assessment process.

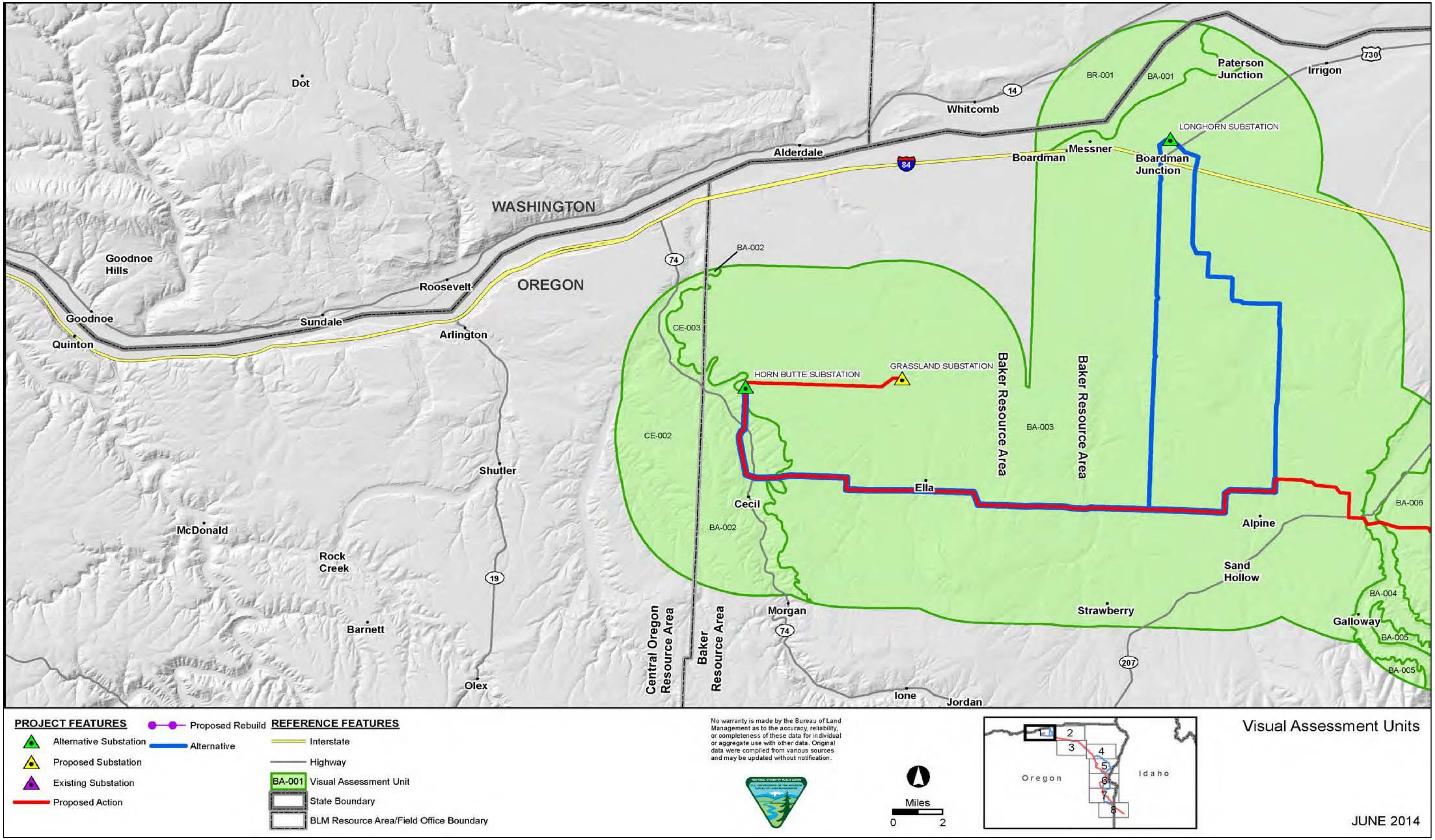


Figure 3-41a. Visual Analysis Units, Map 1

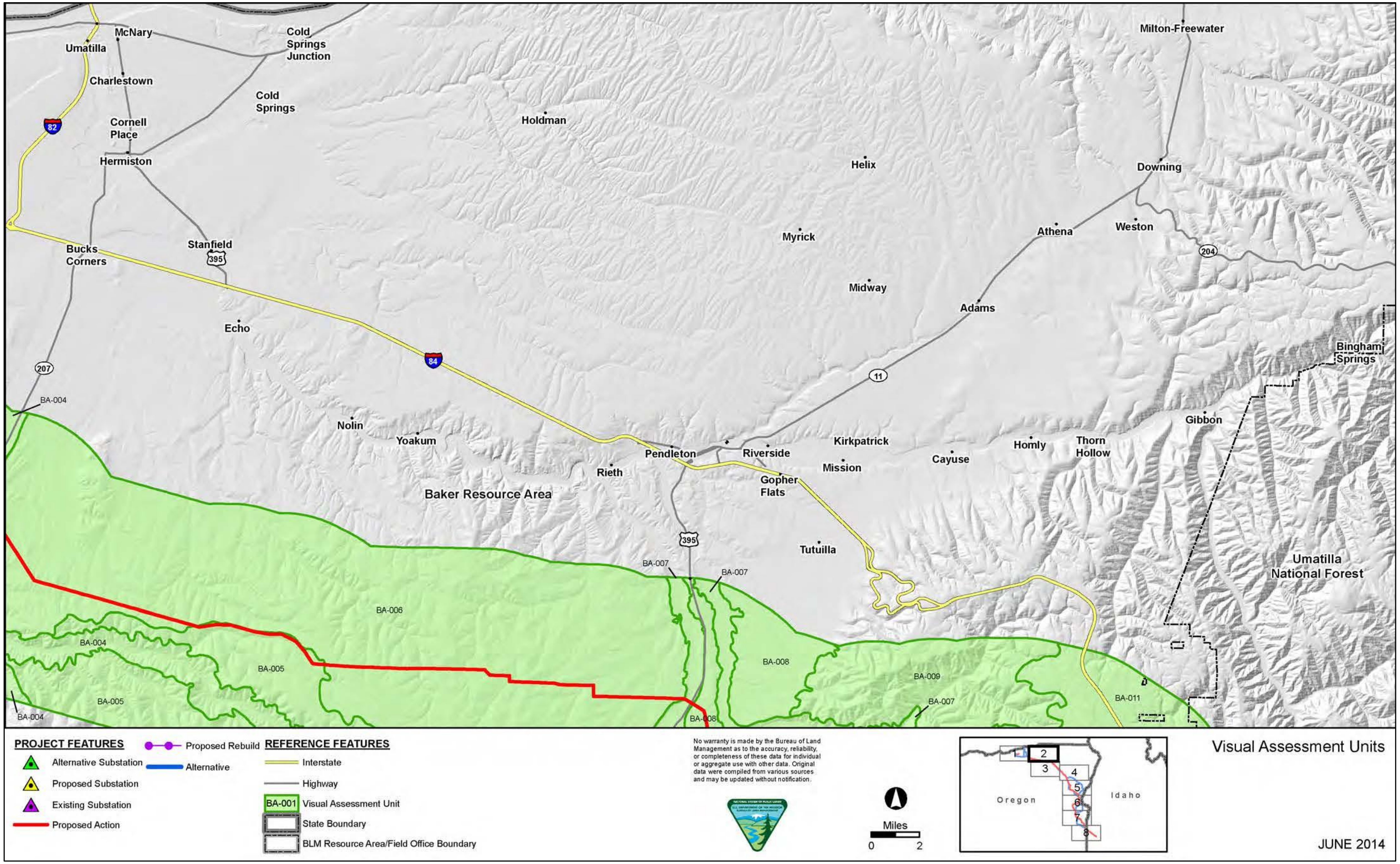
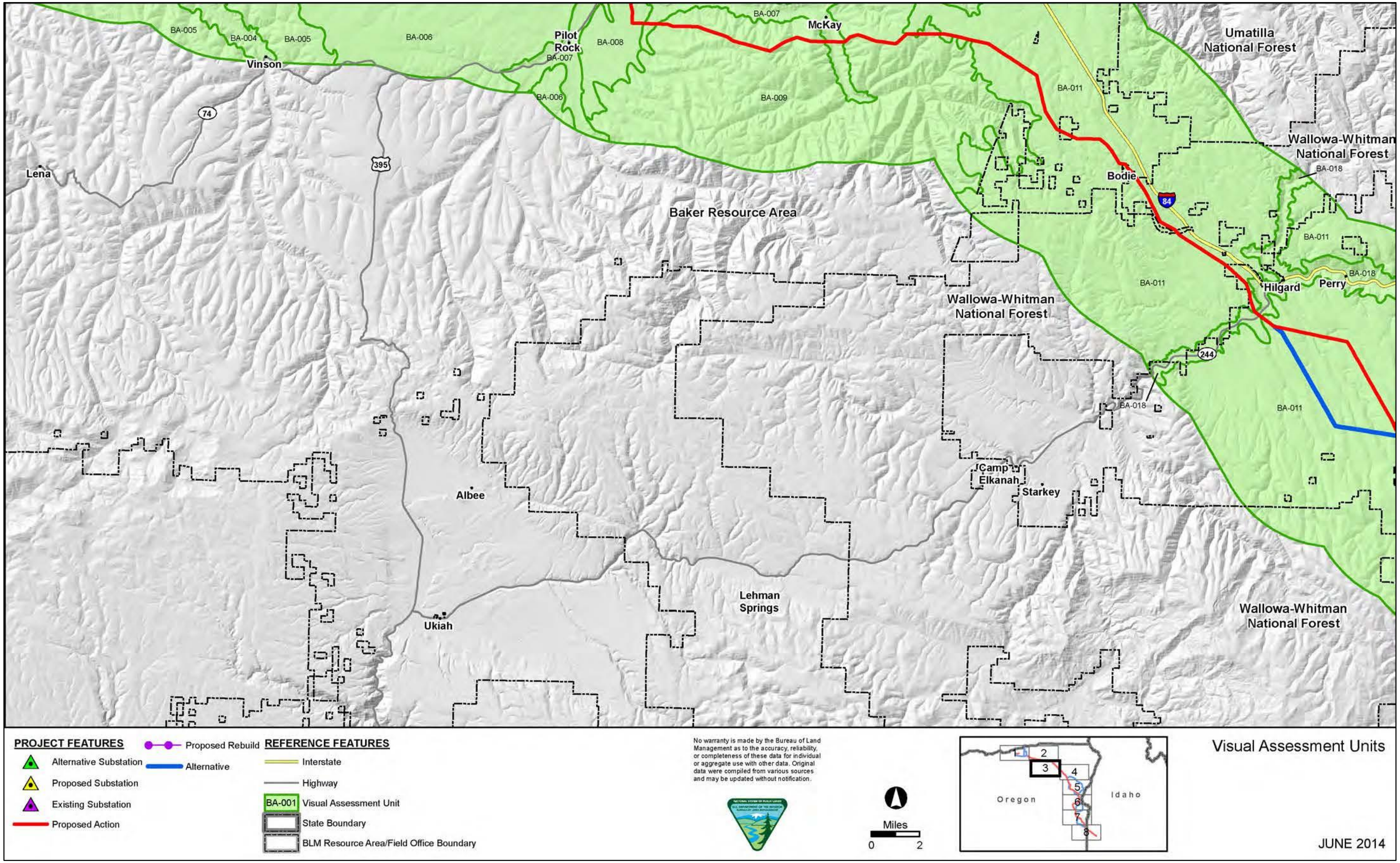


Figure 3-41b.Visual Analysis Units, Map 2

1



2 **Figure 3-41c.Visual Analysis Units, Map 3**

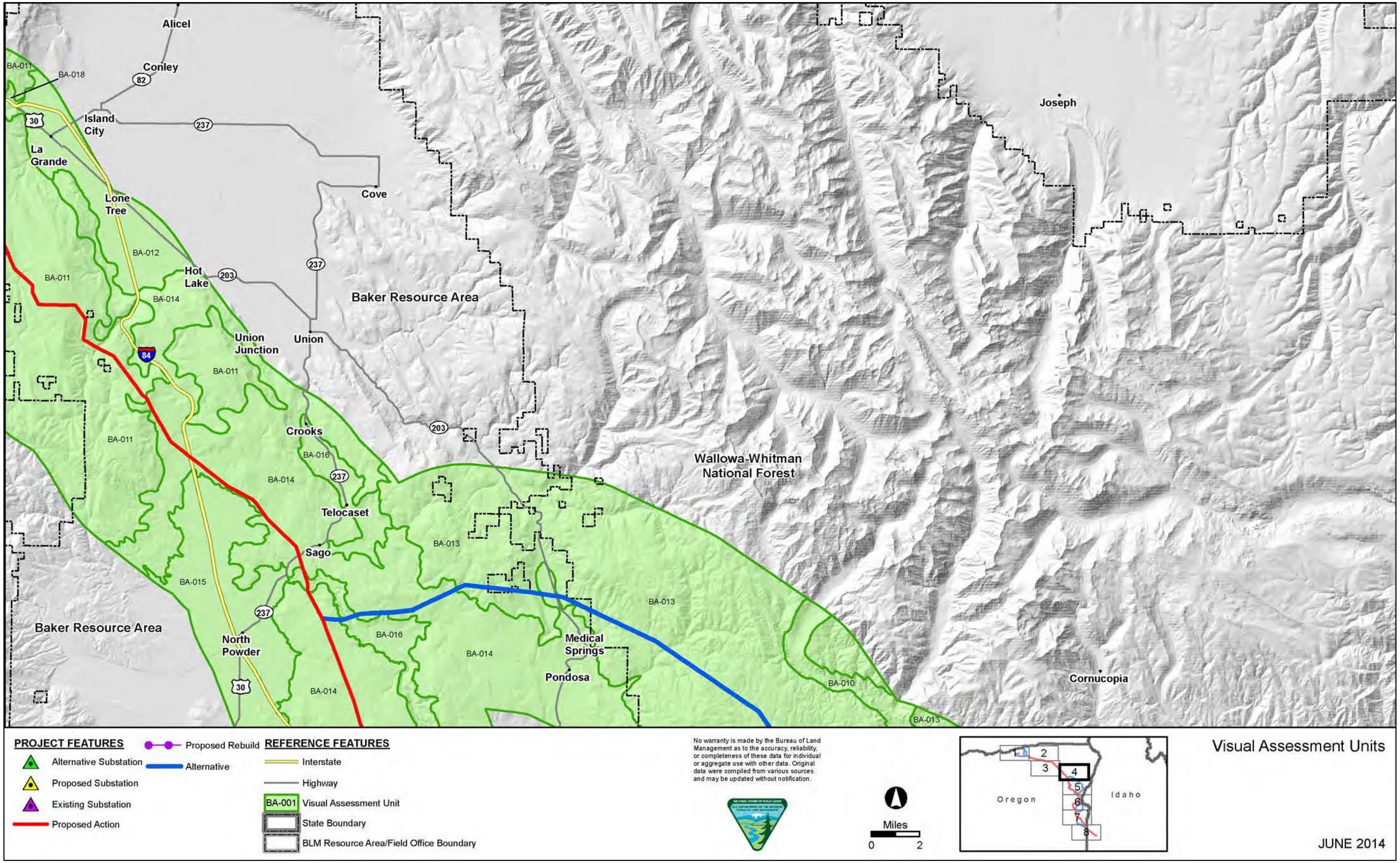
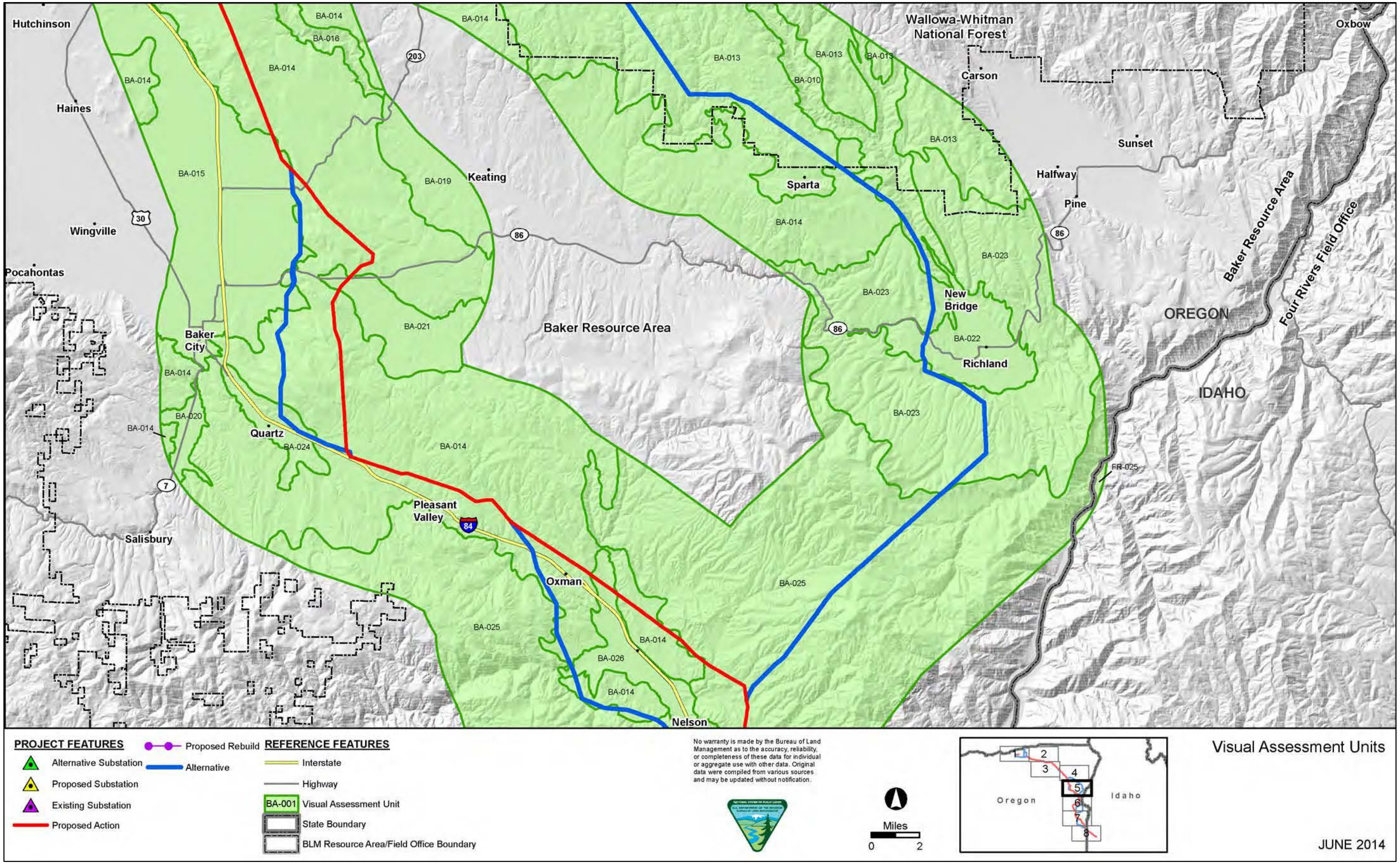


Figure 3-41d. Visual Analysis Units, Map 4

1



2 **Figure 3-41e.Visual Analysis Units, Map 5**

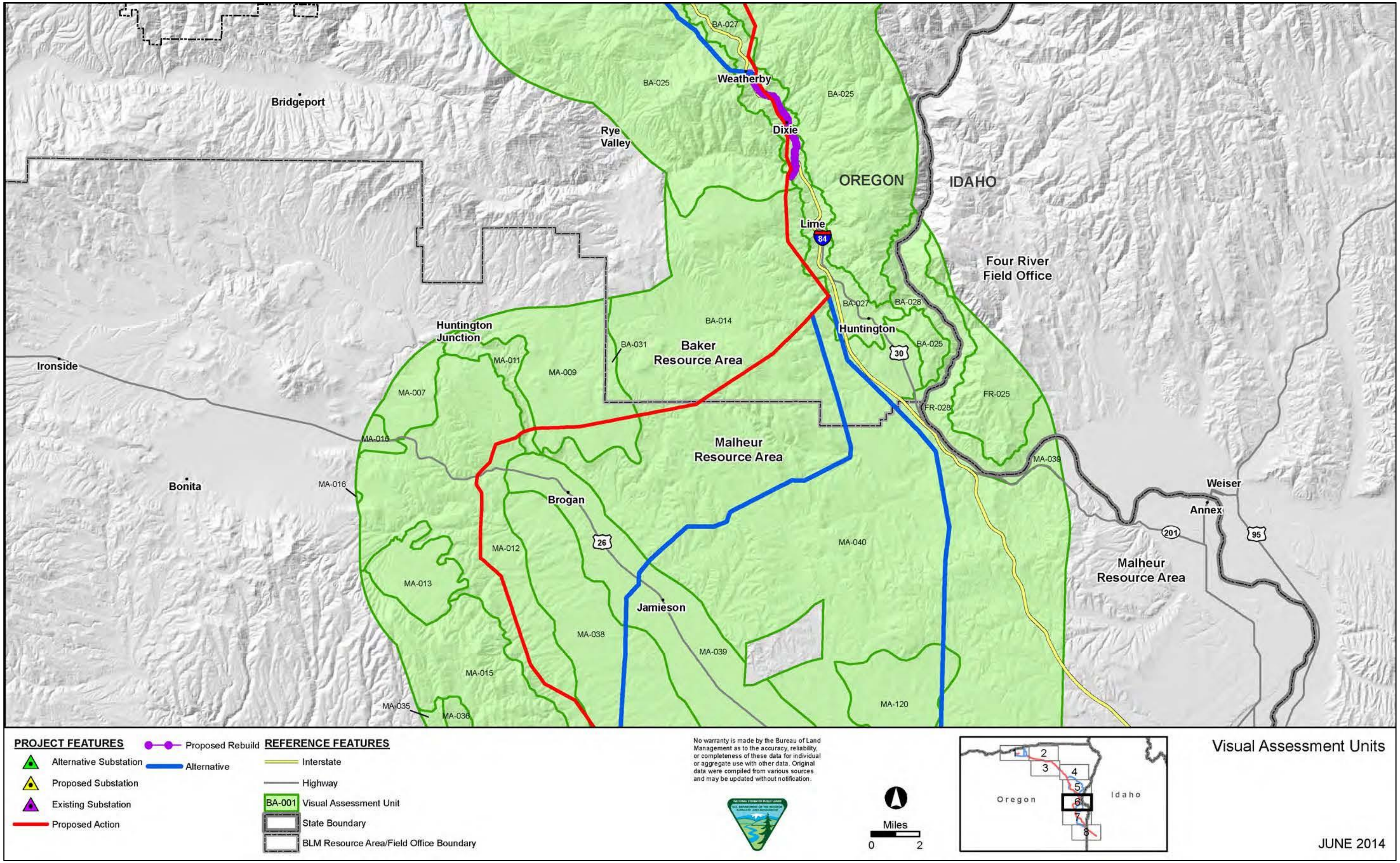


Figure 3-41f.Visual Analysis Units, Map 6

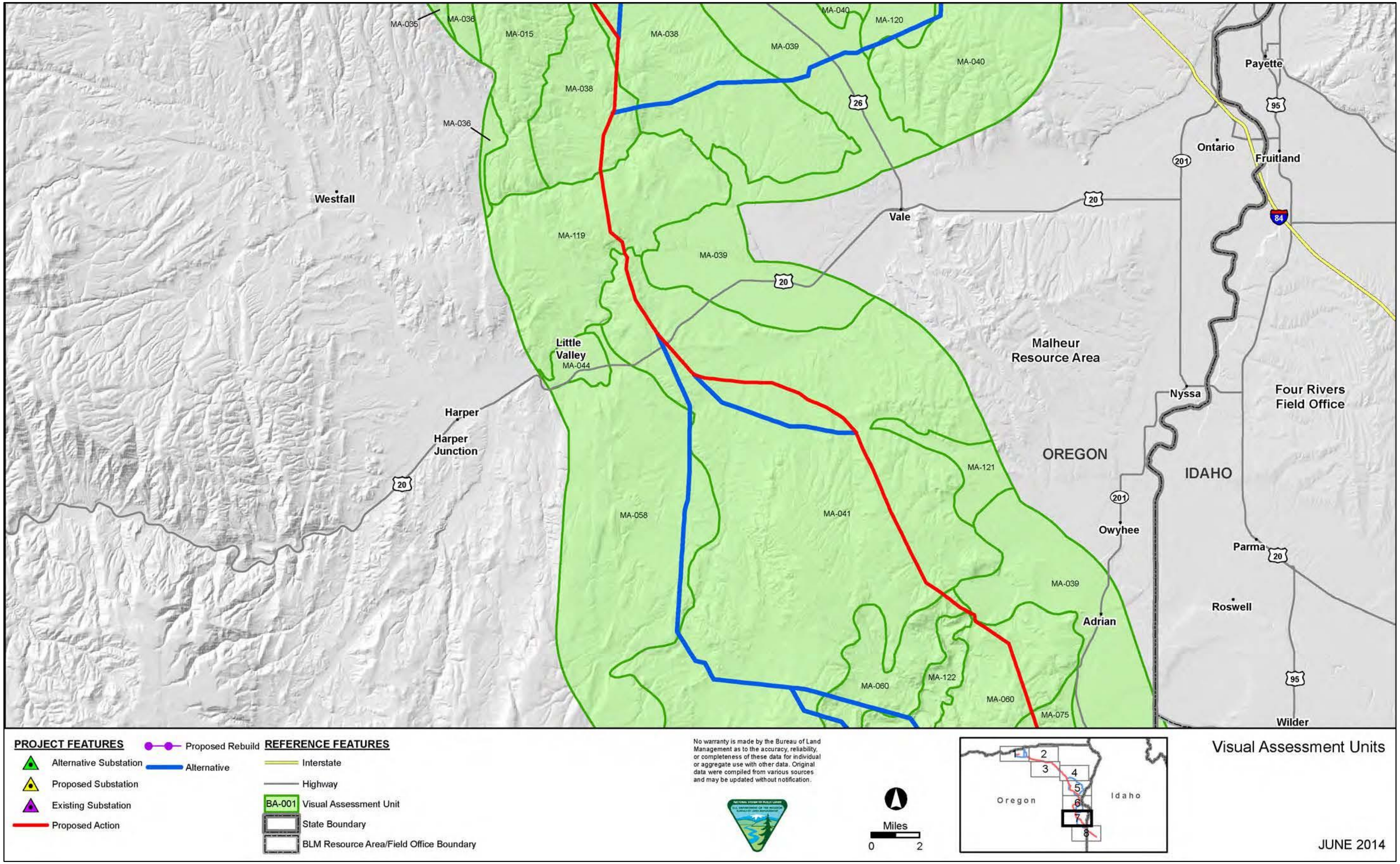


Figure 3-41g.Visual Analysis Units, Map 7

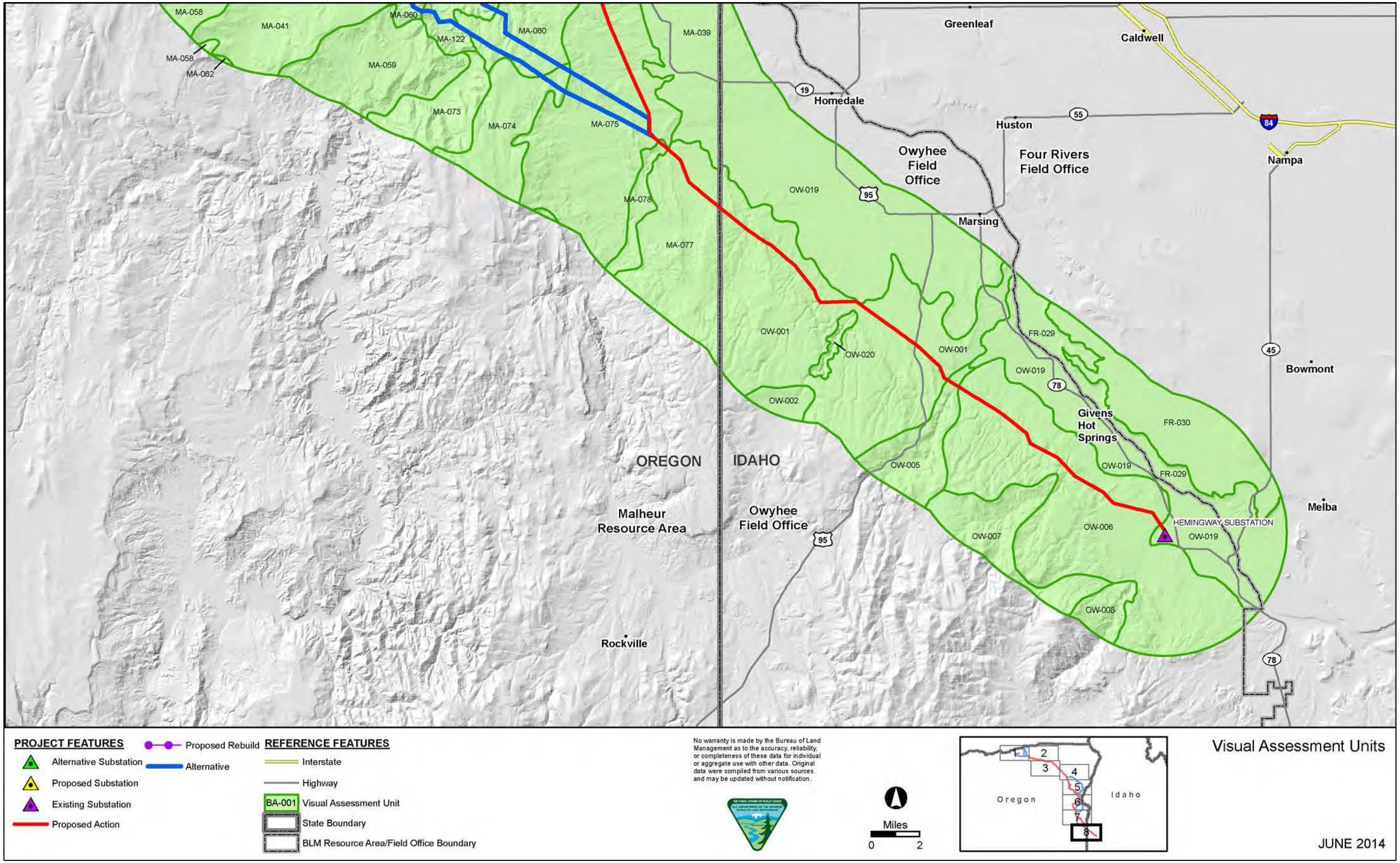


Figure 3-41h.Visual Analysis Units, Map 8

SCENIC QUALITY

The scenic quality of the analysis area for all lands regardless of jurisdiction/ownership was inventoried during the 2013 BLM VRI process. Each SQRU (VAU) received a rating that relates to its inherent aesthetic value based on the key factors of land form, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications, which are used to evaluate the scenic quality of a landscape. The relative scenic quality (A, B, or C) is assigned to a landscape by rating the scenic quality evaluation key factors of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications on a numerical scale. Landscapes considered to have the highest scenic value have a scenic quality rating of A; those with a rating of C are considered to be more common, less distinct landscape (BLM 1986b).

For USFS-administered lands, variety classes relate to the scenic quality of the natural landscape and are categorized similar to BLM's classes. The USFS's VMS variety classes were based on the premise that all landscapes have some value but those with the most variety and distinct features have higher value. Scenic attractiveness is a measure of the aesthetic value inherent in a landscape character unit and is based on landform patterns and features, surface-water characteristics, vegetation patterns, and land use and cultural features. Scenic integrity is the level of intactness associated with the visual elements that define a particular landscape character unit (USFS 1995).

A comparison of the miles of visual resource inventory components and management objectives that the Proposed Action and alternatives would cross by BLM field office and national forest is provided in Table 3-144.

SENSITIVE VIEWING PLATFORMS

Visual sensitivity reflects attitudes and perceptions held by people regarding the landscape and in general, reflect the public's level of sensitivity for noticeable change to the landscape. It recognizes specific places, areas, and features that have visual importance relative to one's home, social, business, and recreation environment. Sensitive viewing platforms represent viewing locations (key observation points) where the public would view the Proposed Project both from a stationary location (e.g., scenic overlook or residential area) or a linear (e.g., scenic byway or trail) location. Table 3-150 provides the list of stationary viewing platforms by name and number and the associated VAU number and name. In general, the stationary viewing platforms were identified through review of federal, state and local land use and resource plans; land use data available in geographic information system (GIS) format; protected areas identified by the State of Oregon; the federal and state public scoping process performed for the Project; parks and recreation areas; presence of residential and developed areas; along US and state highways; and consultation with federal, state and county agencies and organizations (TetraTech 2012). The rationale for selection of the stationary viewing platforms are also provided in Table 3-150. In addition to the considerations noted above, the view characteristics from the platform of the project components can also be considered in the selection of the specific platforms. The angle of view from linear platforms is measured in terms of viewer position and view orientation. View orientation is categorized as predominantly "head-on" views (directly in front of the viewer) or parallel views (tangential to the viewer) from linear platforms. Viewer position is characterized as superior to (above), neutral to, or inferior to (below) the project components. The angle of view from stationary platforms also considers the degree of exposure within the 360 degrees of the potential viewing area, i.e., how much of the proposed project components would occupy a person's view if they would turn in a complete circle. The view characteristics are provided for the stationary viewing platforms in Table 3-150.

Linear sensitive viewing platforms include the scenic byways as listed in Table 3-149 and interstate/US, state, USFS, and sensitive local routes within the analysis areas. The interstate and state routes are listed in Table 3-151 and shown in Mapbook 2 of Appendix B.7.These routes are also identified as a stationary viewing platform because specific viewpoints on the route were considered sensitive. As a linear sensitive viewing platform, the entire length of the route within the analysis area is evaluated and not just from a single viewing location.

Table 3-150. Stationary Sensitive Viewing Platforms

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
1	1-5	Oregon Trail Fourmile Canyon Interpretive Site	CE-002 Willow Creek	Platform 1-5 is located approximately 4 miles west of project components and adjacent to Fourmile Canyon Road at a recreation site. Viewer position from Platform 1-5 would be inferior with relative degree of exposure of project components of approximately 180°or less.
1	2-10	Boardman Generating Plant	BA-003 Longhorn	Platform 2-10 is located approximately 1 mile from the Boardman Generating Plant on private land along the generating plant access road. The closest project components would be approximately 0.3 miles from Platform 2-10. Viewer position from Platform 2-10 would be predominately neutral with relative degree of exposure of project components of approximately 180° or less from this Platform.
1	2-15	Boardman Conservation Area – Immigrant Lane	BA-003 Longhorn	Platform 2-15 is located adjacent to Immigrant Lane next to the Boardman Grasslands Conservation Area, approximately 0.6 miles from the closest project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 90° or less.
1	2-16	Lindsay Prairie Preserve	BA-003 Longhorn	Platform 2-16 is located along Little Juniper Lane adjacent to the Lindsay Prairie Preserve approximately 1.5 miles from transmission line components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 180° or less.
1	2-17	Boardman Research Natural Area – Bombing Range Road	BA-003 Longhorn	Platform 2-17 is located along Bombing Range Road adjacent to next to the Boardman Research Natural Area, approximately 250 feet from the closest project components. Viewer position from this platform would be predominately inferior to neutral with a relative degree of exposure to project components less than 180°.
1	2-18	Boardman Conservation Area-Tower Road south	BA-003 Longhorn	Platform 2-18 is located along Tower Road adjacent to the Boardman Grasslands Conservation Area approximately 0.5 miles from the Boardman Generating Plant. Platform 2-18 would be approximately 1 mile from nearest project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 45° or less.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
1	2-20	Butter Creek Junction	BA-004 Butter Creek	Platform 2-20 is located along Oregon Route 207, near junction of Lexington Echo Highway, Hemiston Highway, and Butter Creek Road in a predominately agricultural landscape south of Boardman, Oregon. Platform 2-20 would be approximately 0.2 mile from nearest project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components less than 180°.
1	2-22	Well Spring Oregon Trail Site	BA-003 Longhorn	Platform 2-22 is located along Immigrant Lane near the Well Spring Oregon Trail Site. Platform 2-22 is within a predominately agricultural landscape, approximately 1 mile from project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.
1	2-23	Wilson Lane Southeast	BA-003 Longhorn	Platform 2-23 is located along Wilson Lane in a rural residential area east of Boardman, Oregon in a predominately agricultural landscape. Platform 2-23 would be less than 0.5 miles from the nearest project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 180° degrees or less.
1	3-12	Pilot Rock Community	BA-008 Spring Hollow	Platform 3-12 is located within an urban residential area of Pilot Rock, Oregon. Platform 3-12 would be approximately 2 miles from the nearest project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately of 90° or less.
1	3-14	Emigrant Springs State Heritage Area	BA-011 Blue Mountains Forest	Platform 3-14 is located near I-84 and associated with the Emigrant Springs State Heritage Area within a forested landscape approximately 4 miles from the nearest project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 180° degrees or less.
1	3-20	McKay Creek National Wildlife Refuge – Boat Launch	BA-007 McKay	Platform 3-20 is located within the McKay Creek National Wildlife Refuge near the northern boundary of the analysis area. Platform 3-20 would be approximately 4.8 miles from the nearest visible project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 180° degrees or less.
1	3-21	McKay Creek National Wildlife Refuge – Spring Creek Road	BA-007 McKay	Platform 3-21 is located along Spring Creek Road in a predominately agricultural landscape approximately 4 miles from nearest project components near the McKay Creek National Wildlife Refuge. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 45° or less.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
2	3-24	Meacham Divide Nordic Skiing Area	BA-011 Blue Mountains Forest	Platform 3-24 is located at the parking area for the Meacham Divide Nordic Skiing Area within a forested landscape. Platform 3-24 is located approximately 2 miles for the nearest project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of approximately 90° or less.
2	4-3	Bird Track Springs USFS Campground	BA-018 Grand Ronde River	Platform 4-3 is located at Bird Track Springs Campground within a forested landscape on USFS-administered lands approximately 4 miles from the nearest project components. The viewer position from this platform would be predominately inferior with relative degree of exposure of project components of approximately 45° or less.
2	4-4	Blue Mountain Crossing Sno-Park	BA-011 Blue Mountains Forest	Platform 4-32 is located at the Blue Mountain Crossing Sno-Park recreation area west of I-84 within a forested landscape on USFS-administered lands. This platform would be less than 0.5 miles from the nearest project components located. Viewer position from Platform 4-32 would be predominately inferior with relative degree of exposure of project components of approximately 180°.
3	4-10	North Powder Community	BA-015 Baker Valley	Platform 4-10 is located east of the residential area of North Powder, Oregon along La Grande-Baker Highway. Platform 4-10 would be approximately 3 miles from the nearest project components. Viewer position from this platform would predominately inferior with a relative degree of exposure of project components 45° or less.
2	4-19	Hilgard Junction State Park	BA-018 Grand Ronde River	Platform 4-19 is located at the Hilgard Junction State Park adjacent to Hilgard Highway near the town of Hilgard within an mountainous and forested landscape approximately 1 mile from the nearest visible project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of approximately 45° or less.
2	4-26	Ladd Marsh Wildlife Area – Foothill Road	BA-012 Grand Ronde Valley	Platform 4-26 is located along Foothill Road near Ladd March Wildlife Area at the base of rolling foothills. Platform 4-26 is approximately 2.4 miles from project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of approximately90° or less.
2	4-27	Ladd Marsh Wildlife Area – State Highway 203	BA-012 Grand Ronde Valley	Platform 4-27 is located along State Highway 203 near Ladd March Wildlife Area within a predominately agricultural landscape along the northern boundary of the analysis area approximately 4.9 miles from the nearest visible project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of approximately 45° or less.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
2	4-28	Morgan Lake Park	BA-011 Blue Mountains Forest	Platform 4-28 is located at Morgan Lake Park within an open plateau area approximately 3 miles west of the town of LaGrande. This platform would be approximately 1 mile from the nearest visible project components. The viewer position from Platform 4-28 would be predominately inferior with relative degree of exposure of project components of approximately 180° or less.
2	4-32	Oregon Trail Interpretive Park	BA-011 Blue Mountains Forest	Platform 4-32 is located east of I-84 in proximity of the Oregon Trail Interpretive Park within a forested landscape located on USFS-administered lands. Platform 4-32 is approximately 1 mile from nearest visible project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components would be approximately225°.
2	4-40	Spring Creek USFS Campground	BA-011 Blue Mountains Forest	Platform 4-40 is located at the Spring Creek Campground located within a forested landscape on USFS-administered lands west of I-84. Platform 4-40 would be less than 0.5 miles from the nearest project components. Viewer position from this platform would be predominately neutral with a relative degree of exposure of project components of 180° or less.
2	4-51	La Grande	BA-012 Grand Ronde Valley	Platform 4-51 is located within the town of La Grande on private land east of I-84. Platform 4-51 would be approximately 4.5 miles from the nearest project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.
2	4-55	Elk Song Ranch	BA-011 Blue Mountains Forest	Platform 4-55 is within an open plateau area approximately 0.5 miles from the nearest project components. Viewer position from this platform would be predominately neutral with a relative degree of exposure of 180° or less.
3	4-60	Medical Springs Community	BA-014 Blue and Wallowa Foothills	Platform 4-60 is located north of the Medical Springs community along Medical Springs Highway within a rolling foothill landscape. Platform 4-60 would be approximately 1 mile from project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.
4	5-5	Huntington Community	BA-027 Caribou Bar	Huntington community is located near the Snake River in Oregon and along I- 84 and U.S. Route 30. User type includes static residential views and recreational travelers (approximately. 490 vehicles - according to 2013 traffic volumes provided by the Oregon Department of Transportation) visiting the area for water based recreational activities associated with the Snake River. The resident's angle of view of the project components would be predominately level to inferior views. The project components would occupy up to 90° of the viewshed relative to the platform, depending on route and distance to project components.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
4	5-13	Farewell Bend State Recreation Area	BA-028 Brownlee Reservoir	Platform 5-13 is located southeast of the community of Huntington along the Snake River on private land approximately 3 miles from project components on private and BLM-administered lands. Viewer position would be predominately inferior with a relative degree of exposure of the project components of less than 45°.
3	5-25a	National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South)	BA-014 Blue and Wallowa Foothills	Platform 5-25a is along the Flagstaff Hill Trail at the National Historic Oregon Trail Interpretive Center (NHOTIC), which is a special designation area with high visitation use (50,680 visitors in 2013). Scenic sensitivity of users is high with specific expectations associated with the Oregon Trail and the surrounding landscape in which this historic migration occurred. Platform 5-25a is located on an elevated landscape on BLM administered lands with the nearest project components approximately 0.8 miles away from this platform. Viewer position would be predominately from this platform. The relative degree of viewer exposure would be less than 90°.
3	5-25b	National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North)	BA-014 Blue and Wallowa Foothills	Similar to Platform 5-25a, scenic sensitivity of users is high with specific expectations associated with the Flagstaff Hill Trail at the NHOTIC and the surrounding landscape in which this historic migration occurred. Platform 5-25b is located on an elevated landscape on BLM administered lands with the nearest project components approximately 1 mile from this platform. Viewer position would be predominately neutral with views of project components. The relative degree of viewer exposure would be less than 90°.
3	5-25c	National Historic Oregon Trail Interpretive Center (Panorama Point)	BA-014 Blue and Wallowa Foothills	Similar to the other KOPs located at the NHOTIC, Panorama Point has a high level of visual sensitivity associated with the Oregon Trail and landscape in which this historic migration occurred. Platform 5-25c is located on an elevated landscape on BLM administered lands with the nearest project components approximately 0.3 miles. Viewer position would be predominately neutral with views of project components on both private land and BLM-administered lands. The relative degree of viewer exposure would be less than 45°.
3	5-25d	National Historic Oregon Trail Interpretive Center (Main Building)	BA-014 Blue and Wallowa Foothills	Platform 5-25d is at the Main Building at the NHOTIC, which experiences high visitation use (50,680 visitors in 2013). Scenic sensitivity of users is high with specific expectations associated with the Oregon Trail and landscape in which this historic migration occurred. Platform 5-25d is located on an elevated landscape on BLM-administered lands with the nearest project components approximately 1 mile away. Viewer position would be predominately neutral with views of project components and the relative degree of viewer exposure would be less than 45°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
3	5-25e	National Historic Oregon Trail Interpretive Center (Wagon Encampment)	BA-014 Blue and Wallowa Foothills	Platform 5-25e is at the Wagon Encampment at the NHOTIC. This platform is located on an elevated landscape on BLM-administered lands with the nearest project components approximately 1 mile. Viewer position would be predominately neutral with views of project components on both private land and BLM-administered lands. The relative degree of viewer exposure would be less than 180°.
3	5-26	Oregon Trail ACEC – Hill Creek Road	BA-014 Blue and Wallowa Foothills	Platform 5-26 is located along Hill Creek Road and associated Oregon Trail point of interest. Visitor use is low due because of the lack of public access to the area. Use at this platform is generally limited to local residents and consist of less than 15 visits per year. Platform 5-26 would be less than 0.5 miles from the nearest project components. Viewer position would be predominately inferior with relative degree of exposure of project components of less than 45°.
3	5-32	Oregon Trail Kiwanis Club Memorial	BA-014 Blue and Wallowa Foothills	Platform 5-32 is associated with NHOTIC and is located along SR 86 on BLM-administered land within a rolling landscape approximately 1.5 miles from project components. Visitors at this location are specifically looking at cultural features and scenic views of the landscape. Viewer position would be predominately inferior with a relative degree of exposure of less than 180° of project components.
3	5-33	Oregon Trail Ruts Interpretive Site	BA-021 Virtue Flat	Platform 5-33 is associated with NHOTIC and is located along SR 86 on BLM-administered land within a rolling landscape approximately 1 mile from project components. Visitors at this location are specifically looking at cultural features and scenic views of the landscape. Use is associated with specific landscape expectations in conjunction with historic human migration of the Oregon Trail. Viewer position would be predominately inferior with a relative degree of exposure of less than 90° of project components.
3	5-34	Powder River ACEC	BA-014 Blue and Wallowa Foothills	Platform 5-34 possesses a scenic component associated with the Powder Wild and Scenic River designation contained within the ACEC. Visitor use to area is less than 250 individuals per year and associated primarily with hunting activities. Visitors are generally focused on the distant panoramic views seen from the platform rather than the ACEC itself. Platform 5-34 is located within a rolling landscape on BLM-administered lands and is approximately 4 miles from project components. Viewer position would be predominately neutral with relative degree of exposure of project components less than 45°.
4	5-59	Spring Wilderness Characteristics Inventory Unit	BA-025 Juniper and Sugarloaf Mountains	Platform 5-59 is located within a mountainous landscape on BLM-administered lands approximately 4 miles from project components. Use is extremely low with less than 50 visitors per year and is predominantly local ranching activities and late season hunting. Viewer position from this platform would be predominately superior with a relative degree of exposure of the project components of less than 90°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
3	5-60	NHOTIC Entrance State Highway 86	BA-021 Virtue Flat	Platform 5-60 is a special designation area with high visitation use (50,680 in 2013) with focused landscape attention within BLM administered lands approximately 0.5 miles from project components. Viewer position would be predominately inferior with relative degree of exposure of the project components of 180°.
3	5-63	Sparta Community	BA-013 Wallowa Mountains	Platform 5-63 is located in the remote community of Sparta within a rolling forested landscape on private land approximately 0.5 miles from project components on private land. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of less than 180°.
3	5-75	Big Lookout Mountain	BA-025 Juniper and Sugarloaf Mountains	Platform 5-75 is from BLM fire lookout point via county road and BLM road systems. Use is extremely low (less than100 visits annually) due to difficulty of road access and seasonal restrictions associated with elevation and weather conditions. Use at this platform is predominantly sightseeing activities associate with scenic driving due to the outstanding scenery and panoramic views. The viewer position would be predominantly superior. Viewer exposure of the project components from this platform would be less than 180°depending on route and distance to project components.
3	5-81	Burnt River VRMII Area	BA-025 Juniper and Sugarloaf Mountains	Platform 5-81 is located on State/private but selected as a prominent view point of BLM VRM II lands and extreme use numbers associated with interstate travel I-84 traffic through the project area (approx. 8,000 – 10,000 vehicles daily according to 2013 traffic volume data from the Oregon Department of Transportation). Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 45°.
3	5-82	Durkee Community	BA-026 Durkee Creek	Durkee is an unincorporated community in Baker County, Oregon and is located at the Vandercar Road exit off I- 84. This platform is on the edge of a privately-owned parcel of land and provides view of project components that would be located on BLM lands. Platform 5-92 is on a high use corridor in addition to this local community, approximately 2 miles from project components. User type includes static residential views and recreational travelers via U.S. 30 (approximately. 490 vehicles per day –according to 2013 traffic volumes provided by the Oregon Department of Transportation). Durkee resident’s angle of view of the project components would be predominately level to inferior views. The project components would occupy up to 180° of the viewshed relative to the viewpoint, depending on route and distance to project component.
3	5-84	Virtue Flat OHV Area	BA-021 Virtue Flat	Platform 5-84 is located approximately 5 miles east of Baker City, Oregon on BLM-administered lands approximately 2 miles from project components. The 4,918 acre site is utilized year around by approximately 7,000-10,000 visitors annually for the purpose of concentrated motorized use as well as other general recreational pursuits. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of less than 45°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
4	7-1	Weiser Dunes OHV Area	FR-028 Brownlee Reservoir	Platform 7-1 is located within a rolling and foothill landscape adjacent to the Snake River on BLM-administered lands approximately 4 miles from project components on a mix of BLM and private lands. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of less than 90°.
4	7-6	Steck Park BLM Recreation Site	FR-028 Brownlee Reservoir	Platform 7-6 is located within an enclosed river canyon adjacent to the Snake River on private land approximately 4.5 miles from project components located on a mix of private and BLM lands. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of less than 45°.
4	8-1	Alkali Springs Interpretive Site	MA-120 Alkali Flats	Platform 8-1 is located within the Tub Mountain Segment of the National Historic Oregon Trail ACEC designated by the BLM. Platform 8-1 is at a small interpretive site near the south end of the ACEC parcel, along Old Oregon Trail Road approximately 8 miles north of Vale, Oregon. Visitor use is low. Facilities at the site include a small parking area and an interpretive panel describing Oregon Trail emigrants' use of the site as a "nooning" stop. This platform is on the west edge of the ACEC area; lands to the east of the Platform are federal lands managed by the BLM, while extensive areas of privately owned rangeland are to the west. The site is along Old Oregon Trail Road, a gravel-surfaced road maintained by Malheur County that is roughly parallel to the Oregon Trail route and overlaps it in places. The viewer exposure of the project components from this platform would be approximately 90°. The primary focus of the viewer's attention would be nonspecific from which the project components would be in view. The viewer position would be predominantly neutral. In the middleground, the amount of viewer exposure of the project components from this platform would be approximately 90°.
4	8-3	Oregon Trail ACEC - Birch Creek	MA-040 Moores Hollow	Platform 8-3 is located at the Birch Creek Interpretive Site, a BLM recreation site with minimal development within the Birch Creek Segment of the National Historic Oregon Trail ACEC. The site is in the northeastern corner of Malheur County approximately 6 miles southeast of Huntington, Oregon and less than 1 mile west from I-84. Visitor use is low. The viewer exposure of the project components from the platform would be approximately 45°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominantly neutral. In the middleground, the amount of viewer exposure of the project components from this platform would be approximately180°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
5	8-4	Board Corral Mountain Wilderness Characteristics Inventory Unit	MA-075 North Alkali	Platform 8-4 is located near the intersection of Succor Creek Road and Fisherman Road in an undeveloped area of eastern Malheur County, approximately 10 miles south of Adrian, Oregon. Project components would be approximately 1 mile north and northeast from this platform. Platform 8-4 is surrounded by federal lands managed by the BLM; the lands west of the Succor Creek Road are within the Board Corral Mountain Wilderness Inventory Unit. Typical use is by people traveling through to Succor Creek Campground.
4	8-5	Bully Creek Reservoir	MA-038 Hope Butte	Platform 8-5 is located near a residential community and recreation destination on Bureau of Reclamation land approximately 2 miles from project. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of less than 90°.
4	8-6	Brogan Community	MA-039 Treasure Valley	Platform 8-6 is located south of the community of Brogan, Oregon along John Day Highway on private land approximately 2 miles from project components on a mix of private and BLM-administered lands. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components would be up to 270°.
4	8-8	Jamieson Community	MA-039 Treasure Valley	Platform 8-8 is located south of the community of Jamieson, Oregon along John Day Highway on private land approximately 1 mile from project components on private land. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components less than 180°.
5	8-18	Lake Owyhee State Park	MA-073 Iron Mountain	Platform 8-18 is located near Lake Owyhee State Park along Owyhee Lake Road on Bureau of Reclamation administered land approximately 2 miles from project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.
5	8-21	McIntyre Ridge Wilderness Characteristics Inventory Unit	MA-075 North Alkali	Platform 8-21 is located in the Succor Creek area of eastern Malheur County, approximately 13 miles south of Adrian, Oregon and the same distance east of Lake Owyhee. The use is very low and mostly hunters and ATV use. The direction of the view is northeast and the project components would be approximately 2.8 miles northeast of this platform. Platform 8-21 is on federal lands managed by the BLM and is adjacent to the McIntyre Ridge Wilderness Characteristics Inventory Unit. The viewer exposure of the project components from this platform may be up to 315°.
4	8-24	Oregon Trail ACEC – Tub Mountain	MA-040 Moores Hollow	Platform 8-24 is located within the Tub Mountain Segment of the National Historic Oregon Trail ACEC designated by the BLM. The site is near the north end of the ACEC parcel, along Old Oregon Trail Road approximately 8 miles south of Huntington, Oregon and 17 miles north of Vale, Oregon. Old Oregon Trail Road is a native-surfaced, two-track road maintained by Malheur County that is roughly parallel to the Oregon Trail route and overlaps it in places. The use is very low. The project components would be approximately 3 miles east of the platform.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
5	8-33	Double Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road	MA-041 Sourdough Basin	Platform 8-33 is located on Twin Springs Road in a largely undeveloped area of northeastern Malheur County, approximately 19 miles southwest of Vale, Oregon. The site is in a large area of contiguous federal lands managed by the BLM, and is adjacent to an area identified as the Double Mountain Wilderness Characteristics Inventory Unit. The use is low. Viewer position would be predominately neutral with a relative degree of exposure of project components may be up to 315°.
4	8-34	South Alkali Sand Hills ACEC	MA-040 Moores Hollow	Platform 8-34 is located in a remote and undeveloped part of Malheur County approximately 6 miles northeast of Vale, Oregon. The site is near the northern edge of the South Alkali Sand Hills ACEC. Access to the site is from Alkali Gulch Road. The direction of the view is northwest and closest project components would be approximately 2.3 miles southeast of this platform. In the foreground, the amount of viewer exposure of the project components from the stationary Platform platform would be approximately 90°.
5	8-37	Succor Creek State Natural Area – North	MA-078 Succor Creek	Platform 8-37 is located near Succor Creek Natural Area within a rural, rolling landscape on Oregon State administered land approximately 4 miles from project components. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of less than 180°.
5	8-51	Big Bend Access Site	MA-039 Treasure Valley	Platform 8-51 is located south of the community of Adrian, Oregon along SR 201 within a rural, agricultural at the foot of sloping landforms on Oregon State-administered land approximately 3 miles from project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.
5	8-52	Lower Owyhee Interpretive Site	BA-026 Durkee Creek	Platform 8-52 is located in Owyhee Canyon at the Lower Owyhee Canyon Watchable Wildlife Area interpretive site within the Owyhee River Below Dam SRMA along the Owyhee Lake Road, approximately 7 miles west of Adrian, Oregon. The use is moderate to high due to the restroom. The direction of the view is to the northeast and project components would be approximately 0.3 mile northeast of the platform. The viewer position would be predominantly inferior. In the middleground, the amount of viewer exposure of the project components from this platform would be approximately 180°. The primary focus of the viewer's attention within the middleground is canyons from which the project components would be in view. The viewer position would be predominantly inferior.
5	8-55	Adrian Community	MA-039 Treasure Valley	Platform 8-55 is located within the developed agricultural community of Adrian, Oregon on private land approximately 4 miles from project components. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
5	8-74	McIntyre Ridge Wilderness Characteristics Inventory Unit – Succor Creek Road	MA-075 North Alkali	Platform 8-74 is located on Succor Creek area of eastern Malheur County, approximately 14 miles south of Adrian, Oregon and the same distance east of Lake Owyhee. Project components would be approximately 4 miles north of the platform. The view of project components would be obstructed by the existing topography.
5	8-75	Antelope Creek Wilderness Characteristics Inventory Unit	MA-077 Antelope Springs	Platform 8-75 is located in the Succor Creek area of eastern Malheur County, approximately 15 miles south of Adrian, 14 miles east of Lake Owyhee, and 1.5 mile west of the Idaho state line. The specific location for this platform is along a gravel road along the northeastern edge of the Antelope Creek Wilderness Characteristics Inventory Unit. The direction of the view is northeast and east and project components would be approximately 1.7 miles from this platform.
5	8-84	Burnt Mountain Wilderness Characteristics Inventory Unit	MA-122 Owyhee River	Platform 8-84 is located in Owyhee Canyon, a short distance to the west of the river and approximately 1.6 miles northwest of Owyhee Dam. The platform is within an area identified as the Burnt Mountain Wilderness Characteristics Inventory Unit. The use is moderate with ATV users and people accessing the reservoir. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of approximately 180° or less.
5	8-85	Sourdough Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road	MA-041 Sourdough Basin	Platform 8-85 is located at the intersection of Twin Springs Road and Rock Canyon Road in an undeveloped part of northern Malheur County. The platform is located within an area identified by the BLM as the Sourdough Mountain Wilderness Inventory Unit. The use is moderate with mostly hunters and ATV users. Viewer position from this platform would be predominately neutral with relative degree of exposure of project components of less than 180°.
5	8-88	Broken Rim Wilderness Characteristics Inventory Unit – Hoo Doo Road North	MA-058 Hoodoo Ridge	Platform 8-88 is located on Hoo Doo Road North in the Sand Hollow area of northeastern Malheur County, approximately 12 miles southwest of Vale, Oregon and 9 miles east of Harper, Oregon. The site is in a large area of contiguous federal lands managed by the BLM and is adjacent to an area identified as the Broken Rim Wilderness Characteristics Inventory Unit. Viewer position from this platform would be predominately inferior with relative degree of exposure of project components of less than 180°.
5	8-90	Double Mountain Wilderness Characteristics Inventory Unit – Rock Canyon Road	MA-041 Sourdough Basin	Platform 8-90 is located on Rock Canyon Road (also known as Negro Rock Creek Road) in an isolated part of northern Malheur County. In the foreground, the amount of viewer exposure of the project components from this platform would be approximately 360°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominantly inferior. In the middleground, the amount of viewer exposure of the project components from this platform would be less than90°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
5	8-91	Double Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road	MA-041 Sourdough Basin	Platform 8-91 is located on Twin Springs Road in a largely undeveloped area of northeastern Malheur County, approximately 19 miles southwest of Vale, Oregon. This platform is adjacent to an area identified as the Double Mountain Wilderness Characteristics Inventory Unit. The viewer position would be predominantly neutral with a relative degree of exposure of project components of less than 45°.
5	8-93	Double Mountain Wilderness Characteristics Inventory Unit – Negro Rock Creek Middle	MA-041 Sourdough Basin	Platform 8-93 is located on Rock Canyon Road in an isolated part of northern Malheur County, approximately 16 miles southwest of Vale, Oregon. This platform is adjacent to an area identified as the Double Mountain Wilderness Characteristics Inventory Unit. The viewer position would be predominantly neutral with a relative degree of exposure of project components of less than 180°.
5	8-94	Double Mountain Wilderness Characteristics Inventory Unit – Negro Rock Creek South	MA-041 Sourdough Basin	Platform 8-94 is located on Rock Canyon Road within a remote landscape that consists of sloping landforms and valley bottoms on private land. Platform 8-94 is less than 0.5 miles from project components that are on private and BLM administered lands. Viewer position from this platform would be predominately neutral with a relative degree of exposure of the project components of 180° or greater.
5	8-95	Lower Owyhee River Site H2	MA-122 Owyhee River	Platform 8-95 is located in Owyhee Canyon along Owyhee Lake Road, approximately 7 miles west of Adrian, Oregon. The direction of the view is to the southwest. Platform 8-95 is located on BLM-managed lands within the Owyhee River Below the Dam ACEC. A moderately use fishing access area is the specific location of this platform. The viewer position would be predominantly inferior with a relative degree of exposure of project components would be less than 180°.
5	8-96	Lower Owyhee River Site H1	MA-122 Owyhee River	Platform 8-96 is located in Owyhee Canyon along Owyhee Lake Road, approximately 7 miles west of Adrian, Oregon. Platform 8-96 is located on BLM-managed lands within the Owyhee River Below the Dam ACEC. A moderately use fishing access area is the specific location of this platform. The viewer position would be predominantly inferior with a relative degree of exposure of project components of less than 45°.
5	8-102	Succor Creek Rural Area	MA-039 Treasure Valley	Platform 8-102 is located within a rural residential community along Succor Creek Road on private land approximately 1 mile from project components on BLM lands. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of less than 90°.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
6	10-12	Trappers Flat Snake River Access Site	FR-029 Snake River/Given Hot Springs	Platform 10-12 is located adjacent to the Snake River within an agricultural landscape on Idaho State land. Platform 10-12 approximately 2 miles from project components that are on BLM administered lands. Viewer position from this Platform is predominately inferior with a relative degree of exposure of the project components of 180° or less.
6	10-17	Snake River Overlook - Pump Road	FR-029 Snake River/Given Hot Springs	Platform 10-17 is located adjacent to the Snake River within an agricultural landscape on private land. This platform would be approximately 2 miles from project components that are on BLM-administered lands. Viewer position from this platform is predominately neutral with a relative degree of exposure of the project components of 180° or less.
6	10-19	Map Rock Snake River Access Site	FR-029 Snake River/Given Hot Springs	Platform 10-19 is located adjacent to the Snake River within an agricultural landscape on Idaho State land and would be approximately 2 miles from project components. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components of 180° or less.
6	12-4	Givens Hot Springs Campground	OW-019 Treasure Valley	Platform 12-4 is located adjacent to the Snake River within an agricultural landscape on Idaho State land. This platform would be approximately 2 miles from project components that are on BLM-administered lands. Viewer position from Platform 12-4 would be predominately inferior with relative degree of exposure of project components of less than 180°.
6	12-5	Hemingway Butte OHV Recreation Area	OW-006 Willow Spring	Platform 12-5 is located within a popular motorized recreation area that receives over 50,000 visitors annually. The use at this platform is due to the areas popularity, which is part of the Murphy Subregion Travel Management Plan area. Viewer exposure of the project components from this platform would be less than 45°. The primary focus of the viewer's attention is rolling terrain and rural developments from which the project components would be in view. The viewer position would be predominantly neutral.
6	12-8	Jump Creek Canyon ACEC	OW-020 Jump Creek	Platform 12-8 is located within the Jump Creek Recreation Area, which is a very popular day use recreation area that receives roughly 25,000 visitors annually. The platform is just outside of the Jump Creek Canyon ACEC. The use of this Platform is due to the areas popularity and outstanding scenic quality. This platform would be approximately 0.4 miles (access roads) and 1.0 miles (transmission line) from the nearest visible project components. Viewer exposure of the project components from this platform would be less than 45°. The primary focus of the viewer's attention is Jump Creek Canyon. The viewer position would be predominantly superior.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
6	12-13	China Ditch Road Rural Residential Area	OW-006 Willow Spring	Platform 12-13 is a small isolated piece of BLM-administered land surrounded by private land in a rural residential area southwest of Wilson, Idaho. The use of this platform is generally low. An existing 500kv transmission line is located approximately 0.2 miles southwest and an existing substation is located 0.3 miles north of the Platform. The primary focus of the viewer's attention is of the existing substation. Platform 12-13 would be approximately 0.9 miles (access roads) and 0.6 miles (transmission lines) from the nearest visible project components. The viewer position would be predominantly neutral. Viewer exposure of the project components from this platform would be approximately would be 180° or less.
6	12-17	Squaw Creek Canyon Entrance	OW-005 Squaw Creek	Platform 12-17 is located on Summer Camp Road within a remote landscape that consists of rolling landforms on private land. Platform 12-17 is less than 0.5 miles from project components that are on private and BLM-administered lands. Viewer position from this platform would be predominately inferior with a relative degree of exposure of the project components less than180°.
6	12-18	Squaw Creek Research Natural Area	OW-001 Owyhee Mountains	Platform 12-18 is located on BLM-administered lands along U.S Highway 95 approximately 8 miles southwest of Marsing, Idaho. BLM lands in this area receive low to moderate use. The primary recreational uses in this area are hunting and OHV riding. The platform would be approximately 2.9 miles (access roads) and 1.5 miles (transmission lines) from the nearest visible project components. Viewer exposure of the project components from this platform would be less than 45°. The primary focus of the viewer's attention is mountainous terrain and rocky outcroppings from which the project components would be in view. The viewer position would be predominantly superior.
6	12-21	Wilson Creek Trailhead	OW-006 Willow Spring	Platform 12-21 is located within a popular non-motorized recreation area (equestrian, mountain bikes, and hikers). The area receives an estimated 30,000 visitors annually and is part of the Wilson Creek Subregion Travel Management Plan area. This platform would be approximately 1.2 miles (access roads) and 1.7 miles (transmission line) from the nearest visible project components. Viewer exposure of the project components from the stationary Platform platform would be less than 90°. The viewer position would be predominantly neutral.
6	12-22	Wilson Creek Wayside	OW-006 Willow Spring	Platform 12-22 is located within a popular non-motorized recreation area (equestrian, mountain bikes, and hikers). The area receives an estimated 30,000 visitors annually and is part of the Wilson Creek Subregion Travel Management Plan area. The platform would be approximately 0.1 miles (access roads) and 0.6 miles (transmission line) from the nearest visible project components. Viewer exposure of the project components from the stationary Platform platform would be up to 180°. The primary focus of the viewer's attention is currently existing 500kv powerlines from which the project components would be in view. The viewer position would be predominantly neutral.

Segment	Platform Number	Stationary Sensitive Viewing Platform Name	Associated Visual Analysis Unit Number/Name	Rationale for Platform Selection
6	12-23	Eastern Terminus - Wilson Cemetery	OW-006 Willow Spring	Platform 12-23 is located on the border of BLM-administered and private land. Public uses within this area are low due to the close proximity to private property. The use of this platform is predominantly associated with the private land owners within the surrounding area. A project component (access road) would be located at Platform 12-23 and would be 0.3 from the nearest visible transmission lines and towers. The viewer position would be predominantly neutral. Viewer exposure of the project components from this platform would be less than 180°. This platform is located near several existing transmission lines, a power substation and a cemetery. The primary focus of the viewer's attention is the existing transmission lines and towers and substation.
6	12-26	Spanish Charlie Basin Wilderness Characteristics Inventory Unit	OW-001 Owyhee Mountains	Platform 12-26 is located along Sands Basin Road, 9 miles SW of Marsing, Idaho and receives low to moderate visitation, with the primary use activities being hunting and OHV riding. This platform is within the Owyhee Extensive Recreation Management Area. Due to the topography/terrain of the area, the proposed project would not be seen from Platform 12-26.
6	12-27	Poison Creek Rural Area	OW-019 Treasure Valley	Platform 12-27 is located on Poison Creek Road within an agricultural landscape that consists on private land. This platform would be less than 0.5 miles from project components that are on BLM-administered lands. Viewer position from Platform 12-27 would be predominately neutral with a relative degree of exposure of the project components of 180° or less.
6	12-28	Jump Creek Rural Area	OW-001 Owyhee Mountains	Platform 12-28 is located on South Jump Creek Road within an agricultural landscape that consists on private land. This platform would be less than 0.5 miles from project components that are on BLM-administered lands. Viewer position from this platform would be predominately neutral with a relative degree of exposure of the project components of 180° or greater.

Table Abbreviations: ACEC = area of critical environmental concern; KOP = key observation point.

Table 3-151. Linear Sensitive Viewing Platforms

Segment	Linear Sensitive Viewing Platforms	County, and State Location
Interstate and US Routes		
1,2,3, and 4	I-84	Baker, Malheur, Morrow, Umatilla, and Union counties, Oregon
5	US Highway 20	Malheur County, Oregon
4	US Highway 26	Malheur County, Oregon
1	US Highway 395	Umatilla County, Oregon
State Routes		
1	State Highway 74	Baker County, Oregon
2,3	State Highway 203	Baker and Union counties, Oregon
2	State Highway 244	Union County, Oregon
Local Routes		
3	Alder Creek Road	Baker County, Oregon
3	Daly Creek Road	Baker County, Oregon
3	Eagle Creek Road	Baker and Union counties, Oregon
3	Manning Creek Road	Baker County, Oregon
5	Mitchell Butte Road	Malheur County, Oregon
5	Owyhee River Canyon Entry Road	Malheur County, Oregon
3	Powder River Wild & Scenic River Corridor/ Thief Valley Reservoir Road	Baker and Union counties, Oregon
3	Sparta Road	Baker County, Oregon
USFS Roads		
2	USFS Road 43 - Ladd Canyon Road	Union County, Oregon
3	USFS Road 67 - Big Creek	Baker and Union counties, Oregon
3	USFS Road 70	Baker County, Oregon
3	USFS Road 250	Baker County, Oregon
	Scenic Byways and National Historic/Study Trails	
1	Blue Mountain Scenic Byway	Gilliam and Morrow counties, Oregon
3	Elkhorn Scenic Byway	Baker County, Oregon
3, 4	Goodale's Cutoff Study Trail	Baker County, Oregon and Washington County, Idaho
2, 3	Grande Tour Route	Union County, Oregon
2, 3	Hells Canyon All American Road	Baker and Union counties, Oregon
3	Journey Through Time Scenic Byway	Baker County, Oregon
1	Lewis and Clark Trail Scenic Byway/National Historic Trail	Benton County, Washington
4, 5	Meek Cutoff Study Trail	Malheur County, Oregon
1, 2, 3, 4, 5, and 6	Oregon National Historic Trail	Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties, Oregon and Owyhee County, Idaho
6	Snake River Canyon Scenic Byway	Canyon County, Idaho

Segment	Linear Sensitive Viewing Platforms	County, and State Location
3, 4	Snake River-Mormon Basin Back Country Byway	Baker County, Oregon
6	Western Heritage Historic Byway	Canyon County, Idaho

Special Management Areas

There are eight special management areas (SMAs) that could be indirectly impacted by the Proposed Action and alternatives (Appendix B.7, Mapbook 3). While there are other SMAs within the analysis area, the eight listed below have scenic resources identified as one of the qualities that was considered as part of the rationale for the designation for special management. These SMAs with scenic qualities include:

- VRM Class I area surrounding Owyhee Lake
- Oregon Trail - Birch Creek ACEC
- Oregon Trail - Tub Mountain ACEC
- Oregon Trail ACEC (includes White Swan, Powell Creek, Blue Mountain, and Straw Ranch 1 and 2 parcels)
- Owyhee Below Dam ACEC
- Owyhee Views ACEC
- Powder River ACEC
- Wild Horse Basin WSAOR-034-118

Visibility Analysis and Distance Zones

A visibility analysis was performed using ArcView Spatial Analyst to identify all areas that would be visible from the Proposed Action and each alternative for a distance of 5 miles on either side of the centerline of the transmission line alignment as well as the proposed access roads and substations. The analysis identified where the proposed project components would be visible if there were no vegetation or structures to screen the project components. This analysis, based on “bare earth” visibility reflects the worst-case scenario in determining the potential visual impacts. Existing vegetation may help to minimize the impacts by screening views to and from the Proposed Action and alternatives. However, since vegetation is subject to fire and disease, it cannot be considered as a permanent measure to reduce impacts.

The ability to discern change in the landscape primarily depends on distance (BLM 1986). For this analysis, the foreground distance zone is defined as the area up to 0.5 mile from the Proposed Action or the alternatives, and the middleground distance zone is the area from 0.5 mile to 5.0 miles. Background is considered to be between 5 and 15 miles while seldom seen is greater than 15 miles.

Environmental Factors

Environmental factors can influence the amount of visual contrast, dominance, and level of attraction introduced by project components. For this project-level analysis, the factors evaluated include visibility conditions, angle of view (relative viewer position and view orientation), duration of view (in time or distance), and scale and spatial relationship (degree of contrast) of the Proposed Action and alternatives in relation to sensitive viewing platforms (BLM 1986a). An environmental factors evaluation was completed for each stationary and linear platform and for each special management area that has visual resources identified as a "value" as part of the rationale for that area's special management designation.

Visibility conditions refer to how the proposed project components would be viewed in the landscape from stationary or linear platforms, not whether the proposed project would be seen or not seen from the platforms. These conditions are assessed by looking at the juxtaposition of the project components in the landscape. One condition is whether the project components would be seen predominantly skylined (silhouetted above the landforms) or whether they would be seen backdropped against landforms. The second condition is whether the views of project components would be predominantly unobstructed or partially obstructed. The third visibility condition is whether views of the project components would be predominantly continuous—that is, landforms or other features would be viewed over a distance— or if the views of the project components would be intermittent. The view is considered to be intermittent or discontinuous when the landforms or other features would break up or block the view of the project component. See Figure 3-42 for a photographic example of visibility conditions.

Figure 3-42. Example of Visibility Conditions

Figure Note: **Photograph depicts a transmission line whose visibility conditions are characterized as skylined, unobstructed, and continuous from this viewpoint.**

The views from sensitive viewing platforms can also be affected by the angle of view, which is measured slightly differently for linear and stationary platforms. The angle of view from linear platforms is measured in terms of viewer position and view orientation. Viewer position is characterized as superior to (above), neutral to, or inferior to (below) the project components. View orientation is categorized as predominantly “head-on” views (directly in front of the viewer) or parallel views (tangential to the viewer) from linear platforms. The angle of view from stationary platforms is measured as the degree of exposure within the 360 degrees of potential viewing area—that is, how much of the proposed project components would be seen if viewers were to turn in a complete circle. The angle of view from stationary platforms is also evaluated to determine whether or not the project components would be seen in the same viewing direction as the primary feature, if there is one. For example, at a scenic overlook with a view of a landmark feature, the evaluation would document whether the proposed project components would be seen as part of the typical view the landmark or away from the typical view of the landmark. See Figure 3-43 for a photographic example of viewer position and view orientation conditions along a linear platform.

Figure 3-43. Example of Viewer Position and Orientation Conditions along Linear Platform

Figure Note: Photograph depicts a neutral viewer position for motorists along the road, meaning that the base of the towers and the road are relatively at the same level or elevation. The motorists along this section of the road generally have parallel views of the towers and transmission lines.

The duration of view—that is, how long, in time or distance, the project components would be seen from sensitive viewing platforms—is used to quantify the magnitude of potential impacts on the views from linear and stationary platforms. For linear platforms, the duration of view is calculated in terms of both time and distance as follows: (1) percentage of the total travel time (minutes) along the platform that the project components would be seen, (2) percentage of the total travel distance (miles) along the platform that the project components would be seen, and (3) percentage of the total miles of the project components that would be seen along the platform. To calculated travel time, 55 miles per hour was used as the average rate of speed for roadways, while 3 miles per hour was used for trails. For stationary platforms, the duration of view is calculated in terms of percentage of the total miles of the project components that would be seen from the platform.

The last two environmental factors used in this analysis—scale and spatial relationship—evaluate the degree of contrast (prominence) of the proposed project components in relation to the surrounding landscape when viewed from linear and stationary viewing platforms. Scale refers to the size of the project components relative to various landscape features. The larger the project components would appear, the less they would repeat the common elements and patterns in the surrounding landscape; that is, the project components would appear to dominate the landscape.

In addition to scale, the arrangement or spatial relationship of landscape features can also affect the visual prominence of project components from sensitive viewing platforms. Consideration of the amount of visual contrast created is directly related to the amount of attention that is drawn to an element in the landscape. For example, if the view from a platform is of a panoramic or expansive landscape, the project components would be less prominent (lower contrast), whereas if the view is of an enclosed, or encircled landscape such as a canyon, the project components would be more prominent and would appear to dominate the landscape (higher contrast). The amount of visual contrast created is directly related to the amount of attention that is drawn to an element in the landscape. For this analysis, contrast is assessed by comparing the Proposed Action and alternatives, as well as the associated facilities, with the major features in the existing landscape. See Figure 3-44 for a photographic example of scale and spatial relationship.

Changes in the visual setting because of time of day and seasonal lighting changes, variable atmospheric conditions, and seasonal use differences are not evaluated as part of the environmental factors. It is also assumed that the communities within the analysis area would continue to develop in a manner similar to the existing land use patterns. However, the growth rate and ultimate land use patterns cannot be known, and future land use changes were not specifically considered in the evaluation of potential project impacts on the visual environment.

Impacts from the Proposed Action and alternatives were also evaluated in terms of the impacts over time. For this analysis, short-term impacts are defined as effects that would last less than 5 years and long-term impacts are defined as effects that would last more than 5 years, as outlined in Section III.D.1 of BLM Handbook H-8431-1 (BLM 1986).

Figure 3-44. Example of Scale and Spatial Relationship

Figure Note: Photograph illustrates a railroad bridge that fits within the scale of the surrounding landscape. One reason the bridge is considered a prominent feature isbecause the landforms spatially encloses the view. From this viewpoint, the railroad bridge creates a moderate level of contrast as a result of the scale and spatial relationship of the structure within the existing landscape.

VISUAL IMPACT THRESHOLDS

Table 3-152 defines the threshold of the visual resources impacts on the casual observers at the viewing platforms by each environmental factor and to the existing landscape's scenic quality and landscape character components. The magnitude of impact ranges from none to high for each factor. For example, a low magnitude of change to scenic quality would be considered with an alternative where the landscape would appear to be intact after it is constructed. A high magnitude of change would be when the landscape would appear to be severely altered after an alternative is constructed. The magnitude of the changes in visual character and quality from existing conditions to post-project conditions for this assessment are presented in Table 3-153 through Table 3-174.

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Table 3-152. Visual Impact Thresholds

Effects on Views from Sensitive Viewing Platforms						Effects on Scenic Quality and Landscape Character	
Visibility Conditions	**Angle of View (Linear Platforms)**	**Angle of View (Stationary Platforms)**	**Duration of View (Linear Platforms)**	**Duration of View (Stationary Platforms)**	**Scale/Spatial Relationship**	**Magnitude of Change to Scenic Quality [1], [2]**	**Magnitude of Change to Landscape Character**
None (No Impacts) (Green)							
• Not seen	• Not applicable	• Not applicable	• Not seen	• Not seen	• No perceived change	• No perceived change	• No perceived change
Negligible Impacts (Green)							
• Views of proposed project components are consistently backdropped against terrain. • Views are consistently partially obstructed • Views are consistently intermittent	• Viewer position: superior • View orientation: views are consistently parallel	• Viewer position: predominantly superior • Relative degree of exposure of the project components within the viewshed relative to the observer is 45 degrees or less	• The project components would be seen from 20 percent or less of the total miles of the linear platform within the analysis area. • The project components would be seen 20 percent or less of the total travel time along the linear platform within the analysis area. • 20 percent or less of the total miles of the project components would be seen along the linear platform.	• 20 percent or less of the total miles of the project components would be seen from the stationary platform.	• Project components would repeat elements/patterns common in the landscape. • Project components would not be visually evident.	• Landscape would appear to be intact. • Project components would repeat form, line, color, texture or scale common in the landscape and would not be visually evident. • No apparent change in scenic quality.	• Subtle change • Proposed project would not attract attention
Low Impacts (Yellow)							
• Views of proposed project components are predominantly backdropped against terrain • Views are predominantly partially obstructed • Views are predominantly intermittent	• Viewer position: are neutral and/or superior • View orientation: views are predominantly parallel	• Viewer position: neutral and/or superior • Relative degree of exposure of the project components within the viewshed relative to the observer is 90 degrees or less	• The project components would be seen 20 percent to 40 percent of the total miles of the linear platform within the analysis area. • The project components would be seen 20 percent to 40 percent of the total travel time along the linear platform within the analysis area. • 20 percent to 40 percent of the total miles of the project components would be seen along the linear platform.	• 20 percent to 40 percent of the total miles of the project components would be seen from the stationary platform.	• Project components would introduce elements/patterns common in the landscape. that would be visually subordinate • Project components would create low contrast as compared to other features in the landscape.	• Landscape would appear to be noticeably altered. • Project components would introduce form, line, color, texture, or scale common in the landscape and would be visually subordinate (low contrast). • Negative change in scenic quality rating of 0.5 from existing conditions.	• Notable change • Proposed project would begin to attract attention
Moderate Impacts (Blue)							
• Views of proposed project components are equally backdropped against terrain and skylined. • Views are equally unobstructed and partially obstructed • Views are equally continuous and intermittent	• Viewer position: neutral and/or inferior • View orientation: views are equally head-on and parallel	• Viewer position: neutral and/or inferior • Relative degree of exposure of the project components within the viewshed relative to the observer is 180 degrees or less within a nonspecified view or less than 45 degrees within the primary view of focus	• The project components would be seen 40 percent to 80 percent of the total miles of the linear platform within the analysis area. • The project components would be seen 40 percent to 80 percent of the total travel time along the linear platform within the analysis area. • 40 percent to 80 percent of the total miles of the project components would be seen along the linear platform.	• 40 percent to 80 percent of the total miles of the project components would be seen from the stationary platform.	• Project components would introduce elements/patterns not common in the landscape. • Project components would be visually prominent in the landscape and would create moderate contrast as compared to other features in the landscape.	• Landscape would appear to be substantially altered. • Project components would introduce form, line, color, texture, or scale not common in the landscape and would be visually prominent in the landscape (moderate contrast). • Negative change in scenic quality rating of 1.0 from existing conditions.	• Substantial change • Proposed project would attract attention • Proposed project would begin to dominate the visual setting

Effects on Views from Sensitive Viewing Platforms						Effects on Scenic Quality and Landscape Character	
Visibility Conditions	**Angle of View (Linear Platforms)**	**Angle of View (Stationary Platforms)**	**Duration of View (Linear Platforms)**	**Duration of View (Stationary Platforms)**	**Scale/Spatial Relationship**	**Magnitude of Change to Scenic Quality [1], [2]**	**Magnitude of Change to Landscape Character**
High Impacts (Red)							
• Views of proposed project components are predominantly skylined. • Views are predominantly unobstructed • Views are predominantly continuous	• Viewer position: neutral and/or inferior • View orientation: views are predominantly head-on	• Viewer position: neutral and/or inferior • Relative degree of exposure of the project components within the viewshed relative to the observer is 225 degrees or less within a nonspecified view or 45 degrees or greater within the primary view of focus	• The project components would be seen 80 percent or greater of the total miles of the linear platform. • The project components would be seen greater than 80 percent of the total travel time along the linear platform within the analysis area. • 80 percent or greater of the total miles of the project components would be seen along the linear platform.	• 80 percent or greater of the total miles of the project components would be seen from the stationary KOP platform.	• Project components would introduce elements/patterns that would be visually dominant and create strong contrast as compared to other features in the landscape.	• Landscape would appear to be severely altered. • Project components would introduce form, line, color, texture or scale not common in the landscape and would be visually dominant in the landscape (strong contrast). • Negative change in scenic quality rating of 1.5 or more from existing conditions.	• Severe change • Proposed project would demand attention • Proposed project would dominate in the visual setting

Table Notes: Summary of Impacts tables are color coded according to the scheme denoted in this table: None/negligible = green; low = yellow; moderate = blue; high = red.

[1] Magnitudes of impact align with BLM VRM degrees of contrast as follows: “None” impact = “None” contrast; “Low” impact = “Weak” contrast; “Moderate” impact = “Moderate” contrast; “High and Very High” impacts = “Strong” contrast.

[2] Magnitudes of impact align with USFS VMS visual quality objectives as follows: “None” impact = “Retention” objective; “Low” impact = “Partial Retention” objective; “Moderate” impact = “Modification” objective; “High and Very High” impacts = Maximum Modification” objective.

3.2.7.5 Affected Environment

The following section describes the existing visual character of the analysis area for assessment of visual resources. This section provides information about the character of the regional landscape and land use patterns that have modified the natural landscape.

Regional Landscape Character

Visual resources traversed by the route are a function of geology, climate, and historical processes and are influenced by topographic relief, vegetation, water, wildlife and land use. Human uses such as industrial, timber, agriculture, and urban development activities also contribute to the scenic integrity of the analysis area. The regional landscape character of the existing visual resources within the analysis area is described in terms of ecoregion classifications. The proposed Project spans portions of four ecoregions—Columbia Plateau, Blue Mountains, Northern Basin and Range, and the Snake River Plain (Figure 3-45). The ecoregion classifications for Oregon and Idaho were designed to fit with a comparable, hierarchical system for the United States published by the U.S. Environmental Protection Agency referred to as the North American Ecoregions Level III (EPA 2010).The general characteristics of these ecoregions within the analysis area are summarized below.

Columbia Plateau

The Columbia Plateau covers much of central and southeastern Washington, north-central Oregon, and a small portion of northwestern Idaho. The plateau consists of nearly horizontal sheets of lava built up over time, and its surface is generally flat to rolling with some variations. It is an arid area with sagebrush steppe and grassland native vegetation communities. The region is flanked by moister, predominantly forested, mountainous ecoregions, primarily the Cascades to the west and the Blue Mountains to the south and southeast. Geologically, the Columbia Plateau is known for a deep foundation of multiple layers of volcanic basalt up to 2 miles thick. The Columbia River bisects the plateau and is the dominant water feature in the ecoregion (EPA 2010).

Blue Mountains

This region is a mountainous area located chiefly in northeastern Oregon but extending a short distance into southeastern Washington. The Blue Mountains Ecoregion includes several mountain ranges that are mostly volcanic in origin, and that are lower and more open than the neighboring Cascades and Northern Rockies. The Wallowa and Elkhorn mountains are the highest of the ranges and form the core of the region. These mountains are composed of granitic intrusives, deep sea sediments and metamorphosed rocks rising 9,000 feet above sea level and 3,000 feet above the dissected plateau surface.

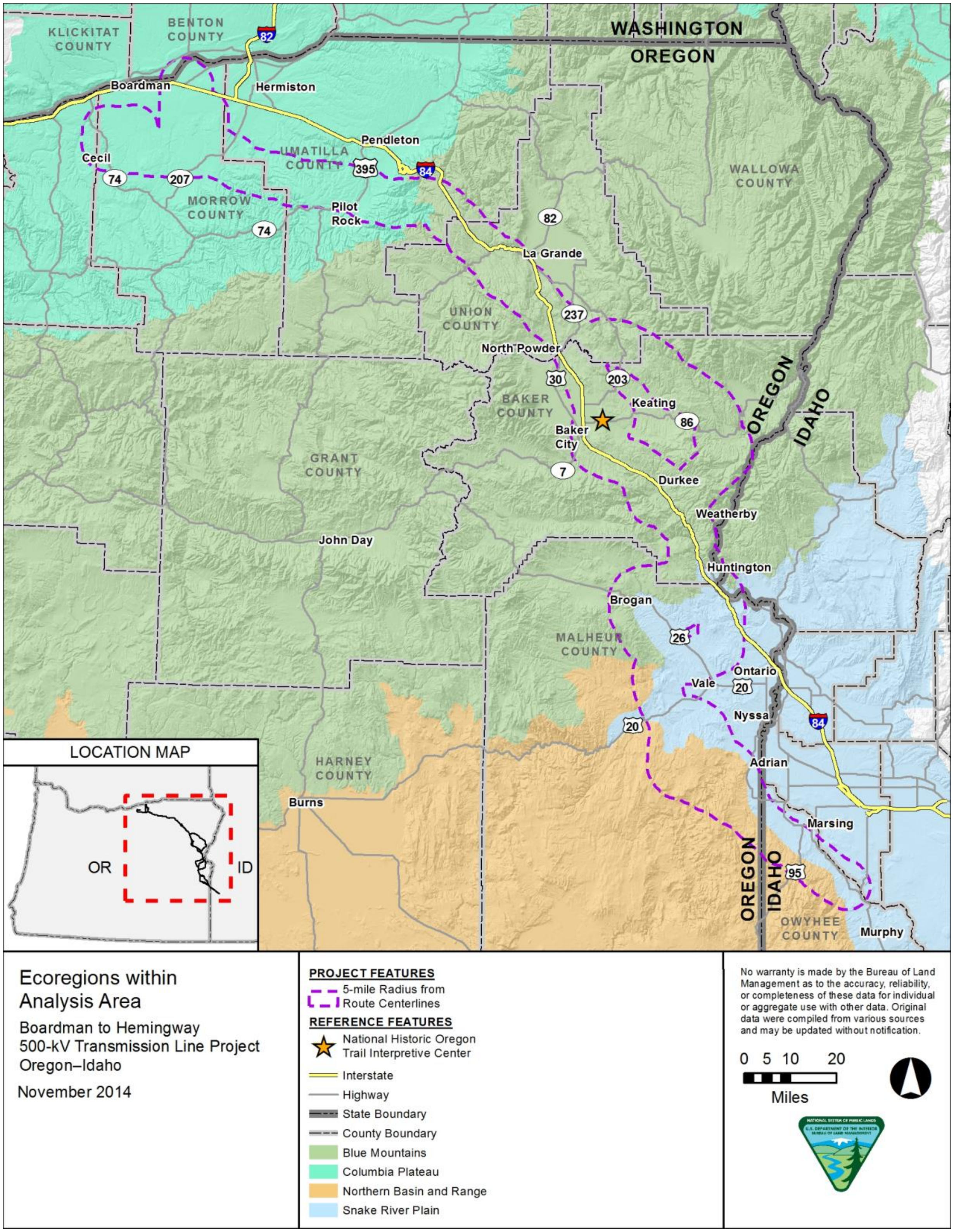


Figure 3-45.Ecoregions within the Visual Resources Analysis Area

In the western portion of the Blue Mountains, the Mesic Forest subregions marine-influenced with higher precipitation than other forested Blue Mountains ecoregions. The ashy soil holds moisture during the dry season and supports a productive spruce-fir forest. In addition, these soils over basalt retain sufficient moisture to support forest cover at lower elevations than elsewhere in the Blue Mountains. A dense and diverse shrub layer grows beneath the relatively open canopy of ponderosa pine and Douglas-fir (EPA 2010).

To the east, beyond the Mesic Forest subregion, is an area that includes the Grande Ronde and Baker valleys, which receive stream flow from the surrounding Blue Mountains. The Grande Ronde Valley has a climate with more marine influence, while the Baker Valley is in the rain shadow of the Elkhorn Mountains and is therefore drier. Much of the valley floor area in this part of the Blue Mountains is now used for agriculture. The southeastern part of the Blue Mountains region has a continental climate and experiences wide temperature variations and high evapotranspiration rates. Natural vegetation consists primarily of desert shrubs, including bitterbrush and mountain mahogany (EPA 2010).

Northern Basin and Range

A portion of the analysis area in central Malheur County is within the Northern Basin and Range Ecoregion, and from approximately Lake Owyhee eastward to Hemingway the Proposed Action is essentially located in the transition zone between the Northern Basin and Range and Snake River Plain ecoregions. It is predominantly rangeland in land use. The Northern Basin and Range Ecoregion contains dissected lava plains, rolling hills, alluvial fans, valleys, and scattered mountains. The area is somewhat higher and cooler than the Snake River Plain with sagebrush as the predominant natural vegetation in the basin areas. The ranges are typically covered with mountain mahogany, junipers, pines, and in the higher elevations, aspen and Douglas firs (EPA 2010).

Snake River Plain

The plains and low hills of the Snake River Plain are part of the xeric intermontane west. It is considerably lower and less rugged than the adjacent ecoregions. A portion of the Proposed Action and the Tub Mountain South, Willow Creek, Double Mountain, and both of the Malheur alternatives would be within the Snake River Plain Ecoregion. Many of the alluvial valleys bordering the Snake River are in agriculture and principally grow sugar beets, potatoes, alfalfa, small grains, and vegetables. Outside of the alluvial valleys, the remainder of the Snake River Plain in both Oregon and Idaho is covered by sagebrush–grassland with rolling foothills, hills, benches, and scattered badlands that are characteristically underlain by alkaline lacustrine deposits. Salt tolerant shrubs, including black greasewood, fourwing saltbush, inland saltgrass, and shadscale, occur on alkaline outcrops .Vegetation outside of agricultural areas is dominated by Wyoming big sagebrush, basin big sagebrush, bluebunch wheatgrass, and cheatgrass. In saline areas, greasewood and saltgrass occur (EPA 2010).

Visual Environment

Land use patterns within the analysis area are influenced by the distribution of land ownership. The portions of Morrow and Umatilla counties that are within the analysis area are almost exclusively with private ownership. Union County is predominantly (about 85 percent) within private ownership, while federal lands managed by the USFS comprise most of the remaining area. Baker County is also about 70 percent in private ownership, with most of the remaining area being federal lands divided between

BLM and USFS management. The parts of Malheur and Owyhee counties that are within the analysis area are nearly 80 percent federal lands under BLM management with less than one percent under Reclamation.

Principal land uses within the analysis area include rangeland in shrub/grass areas, with cultivated agriculture and forestland a distant second and third, respectively. Relatively small portions of the Proposed Action or the alternatives would cross vacant (including disturbed and extractive mining areas), developed (including commercial, residential, recreation, and existing infrastructure), and open water areas. Man-made or built features to the landscape within the analysis area are documented in Sections 3.2.6, 3.2.7, and 3.2.11. Notable built features are summarized below by county.

Morrow County

The Proposed Action crosses privately owned land in Morrow County for approximately 47 miles. The predominant land uses in western Morrow County near the Boardman terminus of the Proposed Action are dryland and irrigated farming, as well as rangeland. Several utility uses are also present, including the Boardman Coal-fired Generating Plant with its 656-foot high stack, existing transmission lines (e.g., the Boardman to Slatt 500-kV line), and extensive wind energy development near the small community of Cecil. The Proposed Action also passes along the western and southern boundary of the Boardman Grasslands Conservation Area, designated by the State of Oregon and managed by The Nature Conservancy. The Proposed Action would parallel the southern boundary of the Boardman Bombing Range. The Department of the Navy currently manages the Boardman Bombing Range as an active training range. The State of Oregon owns and leases a large portion of Morrow County to the Boeing Agri-Industrial Company, whose future plans include developing the entire leased area into irrigated farmland. Boardman, which is located on the southern edge of the Columbia River, is the only incorporated city in Morrow County within the analysis area. Recognized farming communities within or immediately adjacent to the analysis area include Cecil, Ella, and Alpine. Major highways within the analysis area include I-84, U.S. Highways 30 and 730, and State Highway 74 and 207. A portion of the Oregon National Historic Trail also crosses Morrow County at the northern limit of the analysis area.

Approximately 47 miles of the Proposed Action, 28 miles of the Horn Butte Alternative, 18 miles of the Longhorn Alternative, and 22 miles of the Longhorn Variation would cross Morrow County. Only the Proposed Action would continue into Umatilla County.

Umatilla County

The Proposed Action crosses privately owned land in Umatilla County for approximately 49 miles. In the western part of the county, generally west of the incorporated city of Pilot Rock and U.S. Route 395, existing land use is primarily dryland farming. East of U.S. Route 395 and Pilot Rock the Proposed Project progresses through rangeland and the forested land in the foothills of the Blue Mountains near the old Union Pacific Railroad station at Meacham in the eastern portion of the county. In addition to the unincorporated rural communities of Vinson, McKay, and Sparks, there are a number of scattered residences, cabins, and recreation facilities located within the analysis area. The transportation network within the analysis area in Umatilla County includes I-84, U.S. Highways 395 and 30, and Highway 74 as well a portion of the Oregon National Historic Trail. Approximately 50 miles of the Proposed Action would traverse across Umatilla County.

UNION COUNTY

The Proposed Action traverses Union County for approximately 40 miles, including about 6 miles of the Wallowa-Whitman National Forest, about 1 mile of BLM-managed lands in the Vale District, and approximately 33 miles of privately owned lands. Predominant land uses within the county include irrigated agriculture and dryland farming, ranchland, and forested lands. The Wallowa-Whitman National Forest lands support a wide range of recreation activities and numerous developed recreation facilities. Most of the Wallowa-Whitman National Forest portion is within a designated utility corridor, where the Proposed Action is also parallel to I-84, a railway, a 230-kV electric transmission line, a petroleum products pipeline, and two large natural gas pipelines. In addition to I-84 and U.S. Highway 30, State Highways 12, 203, and 244 form the major transportation network within Union County. The Blue Mountain Scenic Byway, Oregon National Historic Trail, and Hilgard Junction State Park are also located in this portion of the analysis area within Union County. In the central portion of the county, an extensive area of developed land uses in and near the city of La Grande is located to the east and north of the Proposed Action. Unincorporated communities with the Union County analysis area include Hilgard, Kamel, Medical Springs, Perry, Pondosa, and Teleocaset.

In the southern portion of the county, the Proposed Action generally runs parallel to an existing IPC 230-kV line crossing mostly rangeland to the Union County/Baker County line. The city of North Powder is located on the Powder River near the county line within the analysis area. There are a number of center pivot irrigation systems and farms in this portion of the county, but not any substantial areas of more intensive development other than North Powder. The Elkhorn Valley Wind Farm is located near the Proposed Action in the southern portion of Union County.

Two alternatives are under evaluation within or partially within Union County in addition to the approximately 40 miles of the Proposed Action. The approximately 8-mile-long Glass Hill Alternative and approximately 62-mile-long Timber Canyon Alternative would traverse rangeland and forest land interspersed with rangeland. The Proposed Action and the Timber Canyon Alternative would continue into Baker County.

BAKER COUNTY

The Proposed Action would cross Baker County for approximately 69 miles, including nearly 18 miles across BLM-administered lands in the Vale District, about 3 miles across state land, and approximately 54 miles would cross private land. The analysis area within Baker County includes several areas where intensive agricultural use occurs. Land use in the county is dominated by agriculture, rangeland, and forested areas. Baker and Durkee valleys are located north and south from Baker City, respectively, are both intensively farmed areas in the county. Baker City is the county seat and the largest city within the county. Huntington, Haines, and Richland are three other incorporated municipalities within the analysis area in Baker County. The unincorporated communities within the analysis area in Baker County include Dixie, Durkee, Lime, New Bridge, Pleasant Valley, and Weatherby.

The National Historic Oregon Trail Interpretive Center represents a major recreational attraction and an area developed for public institutional uses and portions of the Oregon National Historic Trail. In addition to I-84 and U.S. Highway 30, and State Highways 7, 86, and 203 form the major transportation network within Baker County. Near Huntington, in the southeastern corner of Baker County, the Proposed Action leaves the general I-84 corridor and proceeds southwest through an area of steep topography and rangeland to the Baker/Malheur County line.

In addition to the approximately 69 miles of the Proposed Action in Baker County, four alternatives under evaluation would also cross the county. Approximately 48 miles of the Timber Canyon Alternative (which begins in Union County, as discussed above) would pass through Wallowa-Whitman National Forest that is primarily forested, with some rangeland. The Timber Canyon Alternative would continue south and then back west before intersecting the Proposed Action southeast of Durkee. This alternative would cross a portion of the county that consists primarily of rangeland with very little in the way of development. The Flagstaff Alternative would traverse Baker County for about 15 miles in a valley between mountain peaks along the Prospects Range. With the exception of a small area of BLM-managed land, the Flagstaff Alternative would cross privately owned land. Land use in this area is primarily a mix of rangeland and irrigated agricultural land, with transportation and utility uses in and near the I-84 corridor at the southern end of the alternative. The approximately 16.8-mile Ione Burnt River Mountain Alternative would pass just west of Durkee over the Burnt River Canyon. This alternative would primarily traverse rangeland but would also traverse some dryland and irrigated farming along the Burnt River. Starting just west of Huntington, a small portion (approximately 4 miles) of the Willow Creek Alternative would run south and continue into Malheur County.

Malheur County

The Proposed Action would cross northeastern Malheur County for approximately 72 miles, which includes BLM-managed land (for approximately 51 miles), privately owned land (for approximately 21 miles), and Reclamation-managed land (forapproximately1 mile). Most of the land uses within the analysis area in Malheur County are rangeland with little or no development. Typical rural land uses such as single-family residences and farmland occur in a scattered pattern in the analysis area. Vale is the county seat, and Ontario is the largest city within the county. Adrian is the only incorporated municipality within the analysis area in Malheur County. The unincorporated communities within the analysis area in Malheur County include Brogan, Owyhee, and Willowcreek.

A portion of the Oregon National Historic Trail passes through the county. There are also several areas of mining use or gravel pits. The Proposed Action and/or alternatives analysis area include several infrastructure facilities, including I-84, U.S. Highways 20, 26, and 30, State Highway 201, the Union Pacific Railroad, and several existing transmission lines of varying size.

Southwest of the community of Adrian, the Proposed Action passes near the entrance to the Owyhee River Canyon. Other lands within the canyon are managed by Reclamation as part of the Owyhee Irrigation Project, completed in 1939 to furnish irrigation water to over 105,000 acres of land in southeastern Oregon and southwestern Idaho. The irrigation project includes Owyhee Dam and Reservoir, a long, narrow reservoir with about 150 miles of shoreline that experiences heavy recreational use. Upstream of the reservoir, the Owyhee River is designated as a Wild and Scenic River, and the Owyhee Dam is listed on the National Register of Historic Places. The BLM, Reclamation, state, county, and other agencies cooperatively manage and protect the resource values and recreation opportunities within the river canyon.

Five alternatives under evaluation would cross Malheur County. The Willow Creek (approximately 21 miles) and Tub Mountain South (approximately 29miles) alternatives would predominantly cross rangeland that has little to no development, except for a band of cultivated agriculture along U.S. Route 26.The Tub Mountain South Alternative would parallel and cross over the Oregon National Historic Trail. The approximately 7-mile Double Mountain Alternative would exclusively cross BLM-administered land. The Malheur A (33.2 miles) and S (33.6 miles) alternatives would also cross BLM-administered land consist of rangeland with severe topography and little to no development.

OWYHEE COUNTY

The Proposed Action spans approximately 24 miles across Owyhee County, Idaho, including about 19 miles of BLM-managed lands, 3 miles of state and municipal lands, and 2 miles of privately owned lands. The vast majority of land use within the analysis area is a mixture of rangeland, former mining and gravel pit operations, and irrigated agricultural fields. The largest community within the analysis area is Givens Hot Springs, located along the Snake River. Homedale and Marsing are Owyhee County cities that are just outside of the analysis area. The land surrounding the Hemingway Substation is mostly agricultural, with some single-family residential development present. Some areas with special land management designations are located in the vicinity of the Proposed Action in Owyhee County. These include BLM designations for the Jump Creek Canyon ACEC/Special Recreation Management Area, the Squaw Creek ACEC and Research Natural Area, and the Wilson Creek and Hemingway Butte recreation sites. The major transportation network within the analysis area includes U.S. Highway 95 and State Highways 19 and 78 in addition to the Oregon National Historic Trail.

3.2.7.6 ENVIRONMENTAL CONSEQUENCES

The construction, operation, and maintenance of the Proposed Project and the alternatives would result in direct and indirect effects on visual resources. The VAUs have been evaluated in terms of the anticipated magnitude of change in landscape character and scenic quality as well as the effects on views from the sensitive viewing platforms. An analysis of visual dominance, scale, continuity, and contrast was used in determining to what degree the Proposed Action and alternatives would attract attention and to assess the relative change in character and scenic quality as compared to the existing characteristic landscape.

DESIGN FEATURES

The following design features are assumed to part of the project design and include standard Best Management Practices that would be executed during the construction and maintenance of the Proposed Action and alternatives. These design features were considered during the evaluation of environmental consequences.

- The standard structures proposed for the Proposed Action and alternatives would be self-supported steel lattice towers. The towers would be made of “deglared” galvanized steel that has a dulled, matte finish. The dulled finish is darker and less reflective than standard galvanized steel; it would greatly reduce the potential for glare from reflected sunlight, and is better able to recede into the landscape when seen against a terrain backdrop. Utilize non-reflective galvanized lattice towers (double dipped) to bring color to a medium/dark grey or galvanized metal stains to a brownish tone (which ever best blends with the landscape).
- IPC would use self-supported single tubular steel poles with a weathering finish for locations constructed with a double-circuit 138/69-kV transmission line with a 12.5-kV distribution line.
- Conductors for the 500-kV transmission line would have a non-specular finish that reduces the reflectivity of the wires and their potential to create glare.
- Large rocks displaced during road construction would be removed, buried or relocated if leaving them in place would create unnatural lines in the landscape.
- When existing vegetation is present that would help limit the visibility of the Proposed Action and associated facilities, the clearing limits would be marked in an effort to maintain the vegetation. Appropriate replanting would be performed to break up unnatural clearing patterns in areas where edge vegetation could not be maintained.
- A surface-oxidizing rock-stain treatment or similar mineral-based emulsion would be applied to post construction areas where newly-exposed bedrock or unconsolidated surface rock creates strong color contrasts with nearby undisturbed surfaces.
- New roads created would be designed to minimize cuts and fills. Any new roads created to access tower sites would be revegetated but not restored to original contours, in the event that emergency access is needed to a tower location or for periodic inspection and maintenance activities. This would reduce the extent of surface disturbance that is evident on a long-term basis.
- Areas disturbed during construction that would not be required for permanent access roads or for maintenance areas around structures (transmission towers, substations, and communications sites) would be restored and revegetated.
- Staging areas, pulling and tensioning sites and helicopter fly yards are temporary facilities that would only be needed during the construction process. Upon completion of construction these would be restored.
- With respect to the visual characteristics of vegetation management, the key concept is the identification of a wire zone (the area under the conductors and 10 feet beyond the outside phases) and adjacent border zones within the ROW. IPC manages vegetation within the wire zone to maintain a clearance of at least 50 feet between any conductor and the top of a tree. Vegetation management within the border zone is limited to removal of hazard trees and trees greater than 25 feet tall. Because vegetation within the border zone is allowed to grow within these limits, a profile view of the ROW in forested areas would include feathered or scalloped effects to create a softened transition between cleared ROW and standing forest.
- Minimize side casting during road and tower platform construction.
- Utilize concrete stains to blend concrete surfaces to more natural color tones.

- During road and tower platform construction, remove, bury or relocate large rocks or debris if their presence would create another linear visual impact.

Effects Common to All Alternatives

Impacts common to all action alternatives would include impacts associated with construction, operation, and maintenance. Construction of the Proposed Action and/or alternatives would potentially introduce short-term impacts on visual resources as well as permanent impacts. The Proposed Action and alternatives would also include temporary impacts such as tower construction, line stringing, equipment operation, equipment/material transport, construction-related dust, and material stockpiling. These impacts would attract attention within the analysis area, resulting in short-term impacts on visual resources.

Ground disturbing activities related to construction and access road development/improvement could result in permanent adverse impacts on visual resources. Once the transmission line has been constructed, the presence of large transmission towers would potentially introduce permanent impacts on visual resources. Transmission line replacement/re-stringing, potential transmission tower replacement, ongoing vegetative clearing within the right-of-way, and routine transmission line maintenance (and associated vehicular access) could attract attention within the analysis area from the Proposed Action and alternatives.

Indirect Impacts to the Proposed Action

Development of the Proposed Action and/or alternatives may result in short-term and long-term indirect impacts. The cleared area for the towers and substations and permanent access roads would create opportunities for people to park or access previously inaccessible areas of the landscape. This could result in trampling vegetation and additional resource damage such as increased erosion, which may potentially lower the scenic quality in these areas. The permanent access roads would also provide potential scenic viewing opportunities not currently available to people.

Potential Impacts Eliminated From Further Analysis

Potential impacts eliminated from further analysis include visual effects from operation of Proposed Acton and the alternatives. Visual impacts would occur during construction and with the permanent, visible components of the Proposed Action and/or alternatives. Constructed project components that would be visible would incorporate mitigation measures to reduce visual impacts. IPC does not anticipate that structure lighting would be required because proposed structures would be less than 200 feet tall and would be located away from any airports that require structure lighting. Safety lighting at the substations would be provided inside the substation fence for the purpose of emergency repair work. Because night activities are not expected to occur more than once per year, the safety lighting inside the substation fence would normally be turned off. One floodlight, mounted near the entry gate to safely illuminate the substation entry gate, may be left on during nighttime hours. Potential impacts on the night sky from project lighting were eliminated from further analysis.

No Action Alternative

Under this alternative, the existing landscape character and scenic quality would remain as it presently exists. There would be no impact to the casual viewer from sensitive stationary or linear viewing platforms or to views from the Special Management Areas.

Summary of Direct Impacts

A summary of the direct, residual impacts for each alternative route includes a discussion of the general impacts to scenic quality and landscape character in the foreground and middleground distance zones, as well as impacts to people's general views of the landscape from selected stationary and linear platforms and the Special Management Areas. Direct impacts to the action alternatives, as well as the direct impacts related to the comparison of equivalent sections of the Proposed Action, are summarized below based on the information provided in Table 3-153 through Table 3-174 and Table 3-175. As a reference, the definitions of the degree of impact to the change in scenic quality and landscape character are provided in Table 3-152, along with the definitions of the degree of impact to views from stationary and linear platforms and the Special Management Areas.

The Proposed Action is described overall and the alternatives are described by segments. The segments are defined as Segment 1-Morrow-Umatilla; Segment 2-Blue Mountains; Segment 3-Baker Valley; Segment 4-Brogan Area; Segment 5-Malheur; and Segment 6-Treasure Valley.

Proposed Action (including 138/69-kV Rebuild) Direct Impacts

Direct impacts that would be created by the Proposed Action are summarized below, providing an overview of the detailed, quantified impacts provided in Table 3-153. An overall description of the Proposed Action is provided rather than a description by segment.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would predominately range from a moderate to high magnitude of change in scenic quality within the foreground of the Proposed Action alignment in this landscape, which includes flat agricultural valleys, rolling sage steppe hills and mountains, and limited areas of evergreen forest vegetation. There would be areas where the project components would be similar to existing features already present within the foreground, and there would be no perceived change in the scenic quality of those landscapes.

Middleground: Within the middleground, views of the project components would be limited by the increased distance from the project components. Impacts to scenic quality in the middleground would range from negligible to moderate, but would be predominantly low.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high due to the dominant scale of the transmission line towers in comparison to the diverse landforms, sage steppe and forest vegetation, and clustered built features found in the existing landscape.

Stationary Viewing Platforms

There would be no impacts to people's views from 16 of the 71 stationary platforms associated with the Proposed Action because the project components would not be visible from these locations.

Foreground: Thirty-seven of the affected stationary platforms would not include views of the project within the foreground. People's views from nine of the stationary platforms would include predominantly skylined views of the project components, resulting in a high degree of impact to visibility conditions. People's views in the foreground at four of the stationary platforms would experience either wide degrees of exposure (more than 225 degrees).of project components or a lesser degree of exposure (45degrees or greater) in which the project is in direct view of the primary view of focus. Views from two stationary platforms (8-52 Lower Owyhee Interpretive Site; 12-17 Squaw Creek Canyon) would be subject to high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from this platform.

Middleground: People's views in the middleground from eight of the stationary platforms would include predominantly skylined views of the project components, resulting in a high degree of impact to visibility conditions. Views in the middleground at six of the stationary platforms would be subject to either wide degrees of exposure (more than 225 degrees) of project components or a lesser degree of exposure (45 degrees or greater) in which the project is in direct view of the primary view of focus.

Linear Viewing Platforms

Impacts to people's views from the 22 linear platforms associated with the Proposed Action would vary from negligible to high.

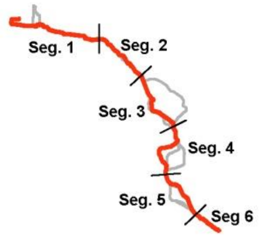
Foreground: People's views of the project components would be predominantly skylined in the foreground from 15 of the platforms, resulting in high impacts to visibility conditions. People traveling along 14 of the linear platforms would also experience high impacts in the foreground related to predominantly head-on views of the project components. The amount of the project in the foreground that people would see from one of the linear platforms (Blue Mountain Scenic Byway) would result in a high impact, with more than 90 percent of project components being visible from the platforms. People travelling along one of the linear platforms (State Highway 74) would also experience a high degree of impact in the middleground associated with the amount of view, with views of the project components for approximately 83 percent of the total time travelled for the platform within the analysis area for this alignment. Nine of the linear platforms would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from these platforms.

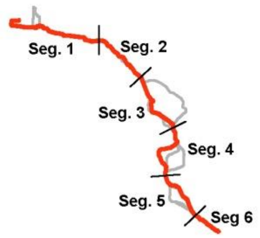
Middleground: People's views of the project components would be predominantly skylined in the middleground from eight of the linear platforms, resulting in high impacts to visibility conditions. People traveling along ten of the linear platforms would also experience high impacts related to predominantly head-on views of the project components in the middleground. The amount of the project that people would see from twelve of the linear platforms would be highly impacted, with 80-92 percent of project components being visible from the platforms. Those travelling along eight of the linear platforms would also experience a high degree of impact associated with the amount of view because people would experience views of the project components for approximately 80-98 percent of the total length travelled for the platform within the analysis area for this alignment. People travelling along six of the linear platforms would experience a high degree of impact in the middleground because they would be exposed to views of the project components for approximately 81-100 percent of the total time travelled for the platform within the analysis area for this alignment.

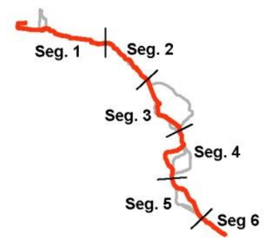
Special Management Areas

Three Special Management Areas (SMAs), Owyhee Below the Dam, Oregon Trail, and Powder River ACECs, would include views of the project components, with impacts ranging from negligible to high. People's views from portions of the Oregon Trail ACEC would include predominantly skylined views of the project components in both the foreground and middleground, resulting in a high impact to this SMA .Project components would also be predominantly skylined in the foreground of the Owyhee Below the Dam ACEC, resulting in high impacts to people's views from portions of this SMA. Views of the Proposed Action would only be seen in the middleground from the Powder River ACEC where the level of contrast created by the project components would be considered low.

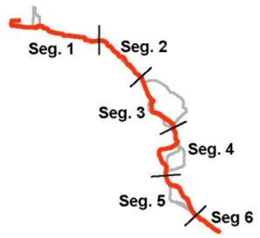
Table 3-153. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Proposed Action, Including 138/69-kV Rebuild Alternative

	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-002 Willow Creek															67/M	C	C	M	C	M	M
BA-003 Longhorn															90/H	C	C	H	C	M	H
BA-004 Butter Creek															50/M	C	C	H	NC	N	H
BA-005 Matlock															53/M	C	NC	N	NC	N	N
BA-006 Coombs															95/H	C	C	H	C	L	H
BA-007 McKay															84/H	C	C	H	C	L	H
BA-008 Spring Hollow															92/H	C	C	H	C	M	H
BA-009 Blue Mountains Rocky Ridge															56/M	B	B	H	B	L	H
BA-011 Blue Mountains Forest															63/M	B	B	H	NC	N	H
BA-012 Grand Ronde Valley															39/L	C	NC	None	NC	N	None
BA-013 Wallowa Mountains															77/M	B	NC	None	NC	N	None
BA-014 Blue and Wallowa Foothills															68/M	B	C	H	C	M	H
BA-015 Baker Valley															90/H	C	C	H	C	L	H
BA-016 Pyles Canyon and Thief Valley															49/M	B	B	H	NC	N	H
BA-018 Grand Ronde River															47/M	A	A	H	NC	N	H
BA-019 Lower Powder Valley															65/M	C	NC	None	NC	N	None
BA-020 Bowen Valley															None	C	NC	None	NC	None	None
BA-021 Virtue Flat															94/H	C	C	H	C	M	H
BA-024 Sutton Creek															44/M	C	NC	N	NC	N	None
BA-025 Juniper and Sugarloaf Mountains															47/M	B	B	H	B	L	H
BA-026 Durkee Creek															97/H	C	C	H	C	L	H
BA-027Caribou Bar															86/H	C	C	H	C	L	H
BA-028 Brownlee Reservoir															7/N	B	NC	None	NC	N	None
BA-031 Phipps Creek															43/M	C	NC	N	C	L	None
CE-002 Willow Creek															32/L	N/A	NC	None	N/A	L	None
CE-003 Longhorn															62/M	N/A	NC	None	N/A	L	None
FR-025 Juniper and Sugarloaf Mountains															12/N	N/A	NC	None	N/A	L	None
FR-028 Brownlee Reservoir															11/N	N/A	NC	None	N/A	L	None

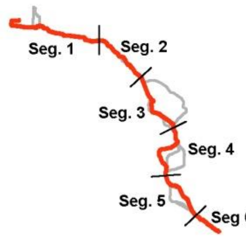
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
FR-029 Snake River/Given Hot Springs															79/M	N/A	NC	None	N/A	L	None
FR-030 Hidden Valley															78/M	N/A	NC	None	NC	N	None
MA-007 Cow Valley Butte															5/N	B	NC	None	NC	N	None
MA-009 Becker Creek															64/M	C	C	M	C	L	M
MA-011 Crow Creek															45/M	B	B	M	NC	N	M
MA-012 Gum Creek															75/M	C	C	M	C	L	M
MA-013 Thorn Flat															5/N	C	NC	None	NC	N	None
MA-015 Juniper Mountain															36/L	B	B	M	NC	N	None
MA-016 Cow Valley															None	C	NC	None	NC	None	None
MA-035 Little Poison															None	B	NC	None	NC	None	None
MA-036 Swede Flat															None	B	NC	None	NC	None	None
MA-038 Hope Butte															74/M	C	C	M	C	L	M
MA-039 Treasure Valley															85/H	B	B	H	B	L	H
MA-040 Moores Hollow															40/L	C	C	M	NC	N	M
MA-041 Sourdough Basin															70/M	C	C	H	NC	N	H
MA-044 Westfall/Harper Valley															87/H	B	NC	None	NC	N	None
MA-058 Hoodoo Ridge															65/M	C	NC	None	NC	N	None
MA-060 Owyhee Tunnel															50/M	B	C	H	NC	N	H
MA-074 Board Coral															22/L	C	NC	None	NC	N	None
MA-075 North Alkali															70/M	C	C	M	C	L	M
MA-077 Antelope Springs															58/M	C	C	M	NC	N	M
MA-078 Succor Creek															21/L	A	B	H	NC	N	H
MA-119 Danger Point															75/M	B	C	H	B	L	H
MA-121 Big sage Flat															59/M	B	NC	N	NC	N	None
MA-122 Owyhee River															30/L	B	B	H	NC	N	None
OW-001 Owyhee Mountains															66/M	C	C	M	C	L	M
OW-002 Sands Basin															None	C	NC	None	NC	None	None
OW-005 Squaw Creek															27/L	C	C	M	NC	N	M
OW-006 Willow Spring															75/M	C	C	M	C	L	M
OW-007 Salmon Butte															27/L	A	NC	N	NC	N	None



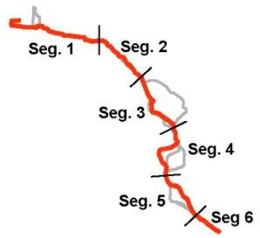
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
OW-008 Reynolds Creek															50/M	B	NC	None	NC	N	None
OW-019 Treasure Valley															93/H	B	B	H	B	L	H
OW-020 Jump Creek															50/M	A	B	M	NC	N	M
Stationary Viewing Platforms																					
2-10 Northern Terminus - Boardman Generating Plant	H	M	H	M							6/N	51/M	M	N							
2-15 Boardman Conservation Area - Immigrant Lane	N	H	L	M							1/N	41/M	N	M							
2-16 Lindsay Prairie Preserve	None	M	None	M							None	53/M	None	L							
2-17 Boardman Research Natural Area - Bombing Range Road	None	N	None	N							None	49/M	None	N							
2-18 Boardman Conservation Area - Tower Road South	None	H	None	N							None	61/M	None	N							
2-22 Well Spring Oregon Trail Site	None	M	None	M							<1/N	12/N	None	M							
2-20 Butter Creek Junction	H	H	M	N							6/N	8/N	M	M							
3-20 McKay Creek National Wildlife Refuge - Boat Launch	None	None	None	None							None	None	None	None							
3-21 McKay Creek National Wildlife Refuge - Spring Creek Road	None	L	None	N							None	L	None	N							
3-12 Pilot Rock Community	None	H	None	L							None	14/N	None	L							
3-14 Emigrant Springs State Heritage Area - Central	None	None	None	None							None	None	None	None							
3-24 Meacham Divide Nordic Skiing Area	None	M	None	L							None	10/N	None	N							
4-28 Morgan Lake Park	None	M	None	M							None	13/N	None	M							
4-32 Oregon Trail Interpretive Park Picnic Area	None	M	None	H							None	15/N	None	M							
4-4 Blue Mountain Crossing Sno-Park	H	None	M	None							3/L	None	L	None							
4-40 Spring Creek USFS Campground	H	L	M	N							5/N	16/N	M	N							
4-55 Elk Song Ranch	N	L	N	M							<1/N	6/N	N	M							
4-26 Ladd Marsh Wildlife Area - Foothill Road	None	None	None	None							None	None	None	None							
4-27 Ladd Marsh Wildlife Area - SH 203	None	L	None	N							None	9/N	None	N							
4-51 La Grande	None	None	None	None							None	None	None	None							
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South)	None	M	None	L							None	16/N	None	L							
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North)	None	M	None	L							None	8/N	None	L							



	Sensitive Viewing Platforms																	Scenic Quality					
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
5-25c Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Panorama Point)	None	L	None	N							None	1/N	None	N							
5-25d Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Main Building)	None	L	None	N							None	<1/N	None	N							
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment)	None	L	None	M							None	15/N	None	L							
5-26 Oregon Trail ACEC - Hill Creek Rd	L	L	N	L							1/N	3/N	N	N							
5-32 Oregon Trail Kiwanis Club Memorial	None	M	None	M							None	6/N	None	N							
5-34 Powder River ACEC	None	L	None	N							None	10/N	None	N							
4-10 North Powder Community	None	L	None	L							None	26/L	None	N							
5-18 Interstate 84 Baker Valley Rest Area	None	None	None	None							None	None	None	None							
4-19 Hilgard Junction State Park	None	H	None	N							None	3/N	None	L							
4-3 Bird Track Springs USFS Campground	None	M	None	L							None	14/N	None	N							
5-33 Oregon Trail Ruts Interpretive Site	None	M	None	H							None	7/N	None	L							
5-60 NHOTIC Entrance SH 86	H	H	L	M							3/N	12/N	M	L							
5-84 Virtue Flat OHV Area	None	L	None	N							None	18/N	None	L							
5-59 Lands with Wilderness Characteristic Unit, OR-035-016	None	L	None	L							None	60/M	None	N							
5-81 Burnt River VRM II Area	None	None	None	None							None	None	None	None							
5-82 Durkee Community	None	M	None	M							None	31/L	None	L							
5-31 Oregon Trail Crossing - Weatherby	H	None	L	None							3/N	None	M	None							
5-5 Huntington Community	None	M	None	L							None	28/L	None	N							
1-5 Oregon Trail Fourmile Canyon Interpretive Site	None	None	None	None							None	None	None	None							
7-6 Steck Park BLM Recreation Site [1]	None	H	None	N							None	3/N	None	N							
10-12 Trappers Flat Snake River Access Site [1]	None	L	None	M							None	30/L	None	N							
10-17 Snake River Overlook - Pump Road [1]	None	L	None	M							None	60/M	None	N							
10-19 Map Rock Snake River Access Site [1]	None	L	None	M							None	28/L	None	N							
8-5 Bully Creek Reservoir	None	None	None	None							None	None	None	None							
8-102 Succor Creek Rural Area	None	L	None	M							None	26/L	None	N							
8-51 Big Bend Access Site	None	None	None	None							None	None	None	None							
8-55 Adrian Community	None	None	None	None							None	None	None	None							



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
8-6 Brogan Community	None	M	None	H							None	9/N	None	L							
8-33 Double Mountain Wilderness Inventory Unit - Twin Springs Road	L	L	H	L							3/N	11/N	M	M							
8-90 Double Mountain Wilderness Inventory Unit - Rock Canyon Road	None	L	None	L							None	8/N	None	L							
8-88 Broken Rim Wilderness Inventory Unit - Hoo Doo Road North	None	L	None	N							None	12/N	None	N							
8-21 McIntyre Ridge Wilderness Inventory Unit	None	None	None	None							None	None	None	None							
8-4 Board Corral Mountain Wilderness Inventory Unit	None	M	None	M							None	9/N	None	L							
8-74 McIntyre Ridge Wilderness Inventory Unit - Succor Creek Road	None	None	None	None							None	None	None	None							
8-75 Antelope Creek Wilderness Inventory Unit	None	None	None	None							None	None	None	None							
8-37 Succor Creek State Natural Area - North	None	None	None	None							None	None	None	None							
8-52 Lower Owyhee Interpretive Site	H	None	L	None							<1/N	None	H	None							
12-18 Squaw Creek Research Natural Area - North [1]	None	L	None	N							None	7/N	None	N							
12-26 Spanish Charlie Basin Wilderness Inventory Unit [1]	None	None	None	None							None	None	None	None							
12-28 Jump Creek Rural Area [1]	H	H	H	H							4/N	17/N	L	L							
12-17 Squaw Creek Canyon Entrance [1]	H	None	H	None							39/L	None	H	None							
12-13 China Ditch Road Rural Residential Area [1]	None	M	None	H							None	29/L	None	L							
12-21 Wilson Creek Trailhead [1]	None	M	None	L							None	19/N	None	N							
12-22 Wilson Creek Wayside [1]	N	H	N	M							1/N	14/N	N	N							
12-23 Eastern Terminus - Wilson Cemetery [1]	M	M	N	M							3/N	10/N	N	N							
12-5 Hemingway Butte OHV Recreation Area [1]	None	L	None	N							None	3/N	None	N							
12-27 Poison Creek Rural Area [1]	N	M	M	H							19/N	18/N	N	N							
12-4 Givens Hot Springs Campground [1]	None	None	None	None							None	None	None	None							
12-8 Jump Creek Canyon ACEC [1]	L	L	N	N							22/L	22/L	N	N							
Linear Viewing Platforms																					
Alder Creek Road	M	M	M	H	23/L	77/M	26/L	74/M	<1/N	30/L			M	L							
Blue Mountain Scenic Byway	M	H	M	M	90/H	14/N	75/M	25/L	29/N	12/N			M	L							
Goodale's Cutoff Study Trail [1]	H	H	H	H	19/N	81/H	28/L	72/M	12/N	30/L			H	L							
Grande Tour Route	None	M	None	L	None	13/N	None	28/L	None	31/L			None	N							



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
I-84	H	L	L	L	26/L	44/M	37/L	63/M	26/L	44/M			M	L							
Hells Canyon All American Road	H	H	H	H	16/N	84/H	26/L	74/M	23/L	53/N			H	M							
Manning Creek Road	H	M	H	M	17/N	76/M	60/M	40/M	33/L	2/N			M	L							
Meek Cutoff Study Trail	H	H	H	H	20/N	80/H	24/L	76/M	7/N	25/L			H	M							
Mitchell Butte Road	H	M	H	L	33/L	66/M	33/L	66/M	14/N	36/L			H	L							
Oregon National Historic Trail [1]	H	M	L	L	14/N	85/H	20/N	80/H	26/L	45/M			H	L							
Owyhee River Canyon Entry Road	H	H	H	M	17/N	83/H	32/L	68/M	8/N	25/L			M	M							
Powder River Wild and Scenic River Corridor/Thief Valley Reservoir Road	None	M	None	M	None	11/N	None	45/M	None	13/N			None	L							
Snake River Canyon Scenic Byway [1]	None	L	None	L	None	66/M	None	98/H	None	100/H			None	L							
Snake River-Mormon Basin Back Country Byway	H	M	H	H	19/N	81/H	32/L	68/M	20/N	43/M			H	M							
SR-203	H	M	H	H	11/N	89/H	12/N	88/H	11/N	79/M			L	N							
SR-244	H	H	H	L	22/L	78/M	18/L	82/H	13/N	75/M			H	L							
SR-74	H	H	H	H	67/M	33/L	75/M	25/L	25/L	5/N			L	L							
US-20	H	H	H	H	8/N	92/H	11/N	89/H	2/N	44/M			H	L							
US-26	M	L	H	L	15/N	85/H	19/N	81/H	19/N	81/H			M	N							
US-395	H	M	H	H	13/N	87/H	13/N	82/H	6/N	62/M			H	L							
USFS Road 43 - Ladd Canyon Road	H	M	H	H	12/N	88/H	30/M	70/M	15/N	35/L			M	L							
Western Heritage Historic Byway [1]	None	L	None	L	None	82/H	None	83/H	None	100/H			None	N							
Special Management Areas																					
Owyhee Below the Dam ACEC	H	H	M	M							14/N	57/M	M	L							
Oregon Trail ACEC	H	L	M	M							5/N	49/M	M	L							
Powder River ACEC	None	M	None	M							None	58/M	None	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] Viewing platform occurs in Idaho. The Oregon National Historic Trail and Goodale's Cutoff Study Trail occur in Oregon and Idaho.

Segment 1—Morrow Umatilla Segment

Summary of Direct Impacts—Horn Butte Alternative

The following information provides a succinct summary of potential impacts for the Horn Butte Alternative. The information is organized based on the general headings provided in Table 3-154.

Scenic Quality

Foreground: Based on the presence of existing wind farms, transmission towers, and power generation plants, there would be no perceived change in scenic quality Class C landscapes within the existing landscape in four of the six VAUs within the foreground of the Horn Butte Alternative. In the Willow Creek (BA-002) and Longhorn (BA-003) VAUs, there would be a high magnitude of change in scenic quality because of the dominance of the project components within the landscape.

Middleground: Within the middleground, views of the project components would be somewhat limited by increased distance from the project components and would be either moderately impacted or have no perceived change in the scenic quality.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high due to the dominant scale of the transmission line towers in comparison to the flat to rolling landforms, low sage steppe and agricultural vegetation, and limited amount of built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There would be no impacts to people's views from two of the five stationary platforms because the Horn Butte Alternative project components would not be visible from these locations. Three of the affected platforms would include views of the project within the foreground, with impacts of negligible or high. People's views from one of the platforms (2-10 Northern Terminus - Boardman Generating Plant) would be predominantly skylined in the foreground, resulting in a high degree of impact with respect to visibility conditions.

Middleground: Impacts in the middleground of the five affected stationary platforms would range from negligible to high. People's views from two of the platforms (2-10 Northern Terminus -Boardman Generating Plant; 2-15 Boardman Conservation Area) would be predominantly skylined in the middleground, resulting in a high degree of impact with respect to visibility conditions.

Linear Viewing Platforms

Foreground: Impacts to people's views from linear platforms of the Horn Butte Alternative would vary from negligible to high. All three of the linear platforms would have views of the project components in the foreground and middleground. People's views of the project components would be predominantly skylined in the foreground from two of the platforms (Oregon National Historic Trail; State Highway 74), resulting in high impacts to visibility conditions. People traveling along the Oregon National Historic Trail would also experience high impacts related to predominantly head-on views of the project components. One linear platform (Blue Mountain Scenic Byway) would also experience high impacts related to the amount of project components visible—with 90 percent of the project components visible within the foreground. One linear platform (Oregon National Historic Trail) would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from the platforms.

Middleground: People traveling along all three of the linear platforms associated with the Horn Butte Alternative would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for one of the linear platforms (State Highway 74). From the Oregon National Historic Trail, the amount of the project that people would see in the middleground would be high, including views of 88 percent of the surrounding project components. People travelling along the Oregon National Historic Trail platform would also see project components along 82 percent of the platform, equating to a high degree of impact.

Special Management Areas

There are no special management areas impacted by this alternative.

Summary of Direct Impacts—Longhorn Alternative

The following information provides a succinct summary of potential impacts for the Longhorn Alternative. The information is organized based on the general headings provided in Table 3-155.

Scenic Quality

Foreground: The Longhorn Alternative would lower the scenic quality in one (Longhorn BA-003) out of the five VAUs because of the dominance of the project components. However, in the other four VAUs, there would be no perceived change in scenic quality with the construction and maintenance of the Longhorn Alternative.

Middleground: Within the middleground, views of the project components would be limited by increased distance from the project components, and the magnitude of change would be either low or have no perceived change in scenic quality.

Landscape Character

The magnitude of change in landscape character that would be created by the Longhorn Alternative would be high due to the dominant scale of the transmission line towers in comparison to the flat to rolling landforms, low sage steppe and agricultural vegetation, and limited amount of built features found in the existing landscape in the Longhorn (BA-003) VAU. In the other four VAUs within the analysis area of the Longhorn Alternative, there would be no perceived change in the existing landscape character.

Stationary Viewing Platforms

There would be no impacts to people's views from one of the two stationary platforms because the Longhorn Alternative project components would not be visible from this location.

Foreground: The affected stationary platform (2-23 Wilson Lane Southeast) would not include views of the project within the foreground.

Middleground: Impacts in the middleground of the stationary platform (2-23Wilson Lane Southeast) would range from negligible to high. Impacts to people's views from Wilson Lane Southeast viewing platform would be predominantly skylined in the middleground, resulting in a high degree of impact with respect to visibility conditions.

Linear Viewing Platforms

Impacts to people's views from linear platforms associated with the Longhorn Alternative would vary from negligible to high.

Foreground: Two of the three linear platforms would have views of the project components in the foreground. People's views of the project components would be predominantly skylined in the foreground from two of the platforms (I-84; Oregon National Historic Trail), resulting in high impacts to visibility conditions. People traveling along I-84 and the Oregon National Historic Trail would also experience high impacts related to predominantly head-on views of the project components. One linear platform (Oregon National Historic Trail) would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from the platforms.

Middleground: People traveling along all three of the linear platforms would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the Longhorn Alternative project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for two of the linear platforms (I-84; Oregon National Historic Trail). From the Oregon National Historic Trail and Lewis and Clark Trail, the amount of the project components that people would see in the middleground would be high, including views of 83-100 percent of the surrounding project components. People would also experience high impacts associated with these two linear platforms (Oregon National Historic Trail and Lewis and Clark Trail) with regard to the amount of the linear platform that would have views of the Longhorn Alternative project components. Approximately 80-100 percent of these platform platforms would experience views of the project.

Special Management Areas

There are no special management areas impacted by this alternative.

Summary of Direct Impacts—Longhorn Variation

The following information provides a succinct summary of potential impacts for the Longhorn Variation. The information is organized based on the general headings provided in Table 3-156.

Scenic Quality

Foreground: The Longhorn Variation would lower the scenic quality in one (Longhorn BA-003) out of the five VAUs because of the dominance of the project components. However, in the other four VAUs, there would be no perceived change in scenic quality with the construction and maintenance of the Longhorn Variation.

Middleground: Within the middleground, views of the project components would be limited by increased distance from the project components, and the magnitude of change would be either low or have no perceived change in scenic quality.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high due to the dominant scale of the transmission line towers in comparison to the flat to rolling landforms, low sage steppe and agricultural vegetation, and limited amount of built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There would be no impacts to people's views from two of the five stationary platforms associated with the Longhorn Variation because the project components would not be visible from these locations. Two of the stationary platforms (2-17 Boardman Research Natural Area and 2-23 Wilson Lane Southeast) would include views of the project within the foreground. People at these stationary platforms would see predominantly skylined views of the project components in the foreground, resulting in a high degree of impact associated with visibility conditions. One stationary platform (2-17 Boardman Research Natural Area) would also experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from the platforms.

Middleground: Impacts in the middleground of the three affected stationary platforms (2-16 Lindsay Prairie Preserve, 2-17 Boardman Research Natural Area, and 2-23 Wilson Lane Southeast) would range from negligible to high. High impacts to people's views would occur from all three of the platforms with regard to visibility conditions because views of the project components would be predominantly skylined in the middleground from these locations.

Linear Viewing Platforms

Foreground: Impacts to people's views from linear platforms that would be created by the Longhorn Variation would vary from negligible to high. Two of the three linear platforms would have views of the project components in the foreground. People's views of the project components would be predominantly skylined in the foreground from these two platforms (I-84; Oregon National Historic Trail), resulting in high impacts to visibility conditions. People traveling along I-84 and the Oregon National Historic Trail would also experience high impacts related to predominantly head-on views of the project components. One linear platform (Oregon National Historic Trail) would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from this platform.

Middleground: People traveling along all three of the linear viewing platforms would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for two of the linear platforms (I-84 and Oregon National Historic Trail). From the Oregon National Historic Trail and Lewis and Clark Trail, the amount of the project that people would see in the middleground would be high, including views of 91-100 percent of the surrounding project components. People would also experience high impacts associated with these two linear platforms (Oregon National Historic Trail and Lewis and Clark Trail) with regard to the amount of the linear platform that would have views of the project components. Approximately 92-100 percent of these platform platforms would experience views of the project in the middleground. The project components would also be seen 82 percent of the total travel time on one of the linear platforms (Oregon National Historic Trail) within the analysis area, resulting in a high magnitude of impact for this platform.

Special Management Areas

There are no special management areas impacted by this alternative.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Horn Butte and Longhorn Alternatives and Longhorn Variation

The following information provides a succinct summary of potential impacts for the section of the Proposed Action compared to Horn Butte Alternative/Longhorn Alternative/Longhorn Variation. The information is organized based on the general headings provided in Table 3-157.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality within the foreground of the Proposed Action in the Willow Creek (BA-002) and Longhorn (BA-003) VAUs. In the remaining four VAUs, there would be no perceived change in the scenic quality in the foreground.

Middleground: Within the middleground, views of the Proposed Action project components would be somewhat limited by increased distance from the project components and the magnitude of change would be range from low to moderate.

Landscape Character

The magnitude of change in landscape character that would be created by the Proposed Action project components would be high due to the dominant scale of the transmission line towers in comparison to the flat to rolling landforms, low sage steppe and agricultural vegetation in the Willow Creek (BA-002) and Longhorn (BA-003) VAUs. In the remaining four VAUs, there would be no perceived change in the landscape character in the foreground.

Stationary Viewing Platforms

There would be no impacts to people's views from two of the eight stationary platforms because the Proposed Action project components would not be visible from these locations.

Foreground: Two of the affected platforms would include views of the project within the foreground, with impacts of negligible or high. People's views from one of the platforms (2-10 Northern Terminus - Boardman Generating Plant) would be predominantly skylined in the foreground, resulting in a high degree of impact with respect to visibility conditions.

Middleground: Impacts in the middleground of the five affected stationary platforms would range from negligible to high. High impacts within the middleground would occur from three platforms, associated with visibility conditions from the platforms. People's views from these platforms would include predominantly skylined views of the project components in the middleground.

Linear Viewing Platforms

Impacts to people's views from linear platforms would vary from negligible to high. All three of the linear platforms would have views of the Proposed Action project components in the foreground and middleground.

Foreground: People's views of the project components would be predominantly skylined in the foreground from two of the platforms (Oregon National Historic Trail and SR-74), resulting in high impacts to visibility conditions. People traveling along the Oregon National Historic Trail and SR-74 would also experience high impacts related to predominantly head-on views of the project components. One linear platform (Blue Mountain Scenic Byway) would also experience high impacts related to the amount of project components visible—with 90 percent of the project components visible within the foreground. Furthermore, one linear platform (Oregon National Historic Trail) would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from the platforms.

Middleground: People traveling along all three of the linear platforms would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for two of the linear platforms (Oregon National Historic Trail and SR -74). From the Oregon National Historic Trail, the amount of the project that people would see in the middleground would be high, including views of 89 percent of the surrounding project components.

Special Management Areas

There are no special management areas impacted by this alternative.

Comparison of Horn Butte Alternative to the Equivalent Section of the Proposed Action

The following information provides a succinct summary of potential impacts to compare the Horn Butte Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Horn Butte Alternative would have approximately the same amount of highly impacted acres as the equivalent section of the Proposed Action. In comparison to the Horn Butte Alternate, the Proposed Action would have approximately 8 percent more moderately impacted acres.

Landscape Character

The Horn Butte Alternative would have 4.5 percent more highly impacted acreage than the equivalent section of the Proposed Action. The Proposed Action would have approximately 140 moderately impacted acres, as compared to no moderately impacted acres for the Horn Butte Alternative.

Stationary Viewing Platforms

The Horn Butte Alternative would have no high impacts with regard to viewers at the stationary platforms. The equivalent section of the Proposed Action would have more high impacts with regard to visibility conditions and angles of observation. Horn Butte Alternative would have no moderate impacts with regard to viewers at the stationary platforms. In comparison to the Horn Butte Alternative, the Proposed Action would have more moderate impacts with regard to angles of observation and magnitude of project components visible.

Linear Viewing Platforms

The Horn Butte Alternative would have higher impacts with regard to perceived scale than the Proposed Action. The Proposed Action would have more high impacts with regard to visibility conditions, angles of observation, magnitude of project components visible, and magnitude of platform affected than the Horn Butte Alternative. The Horn Butte Alternative would have more moderate impacts with regard to angles of observation and magnitude of project components visible. The equivalent section of the Proposed Action would have more moderate impacts with regard to magnitude of platform affected, magnitude of duration of view and perceived scale than the Horn Butte Alternative.

Special Management Areas

There are no special management areas impacted by these two alternatives.

Comparison of Longhorn Alternative to Equivalent Section of the Proposed Action

The following provides a succinct summary of potential impacts to compare the Longhorn Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Proposed Action would have approximately 23 percent more highly impacted acres than the Longhorn Alternative. The Proposed Action would have more than 158,000 moderately impacted acres, as compared to no moderately impacted acres for the Longhorn Alternative.

Landscape Character

The equivalent section of the Proposed Action would have 53 percent more highly impacted acreage than the Longhorn Alternative. The Proposed Action would have approximately 140 moderately impacted acres, as compared to no moderately impacted acres for the Longhorn Alternative.

Stationary Viewing Platforms

The Longhorn Alternative would have no high impacts with regard to viewers at the stationary platforms. The equivalent section of the Proposed Action would have more high impacts with regard to visibility conditions, and angles of observation as compared to the Longhorn Alternative. The Longhorn Alternative would have no moderate impacts with regard to viewers at the stationary platforms. The Proposed Action would have more moderate impacts with regard to all of the factors of viewer sensitivity, including visibility conditions, angles of observation, magnitude of project components visible, magnitude of platform affected, magnitude of duration of view and perceived scale as compared to the Longhorn Alternative.

Linear Viewing Platforms

The Longhorn Alternative would have more high impacts with regard to angles of observation. The Proposed Action would have more high impacts with regard to magnitude of project components visible, magnitude of platform affected, and perceived scale. Longhorn Alternative would have more moderate impacts with regard to magnitude of project components visible. The Proposed Action would have more moderate impacts with regard to visibility conditions, angles of observation, magnitude of platform affected, magnitude of duration of view and perceived scale.

Comparison of Longhorn Variation to the Equivalent Section of the Proposed Action

The following information provides a succinct summary of potential impacts to compare the Longhorn Variation with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Proposed Action would have approximately 48 percent more highly impacted acres than the Longhorn Variation. The equivalent section of the Proposed Action would have more than 158,000 moderately impacted acres, as compared to no moderately impacted acres for the Longhorn Variation.

Landscape Character

The Proposed Action would have 32 percent more highly impacted acreage than the Longhorn Variation. It would also have approximately 140 moderately impacted acres, as compared to no moderately impacted acres for the Longhorn Variation.

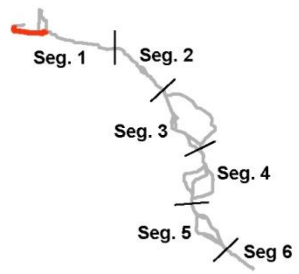
Stationary Viewing Platforms

The Longhorn Variation would have more high impacts with regard to perceived scale in comparison to the equivalent section of the Proposed Action. The Proposed Action would have more high impacts with regard to visibility conditions and angles of observation than the Longhorn Variation. The Longhorn Variation would have more moderate impacts with regard to perceived scale. The Proposed Action would have more moderate impacts with regard to visibility conditions, angles of observation, magnitude of project components visible than the Longhorn Variation.

Linear Viewing Platforms

The Longhorn Variation would have more high impacts with regard to angles of observation and magnitude of duration of view in comparison to the equivalent section of the Proposed Action. The Proposed Action would have more high impacts with regard to visibility conditions, magnitude of project components visible, and perceived scale than the Longhorn Variation. The Longhorn Variation would have more moderate impacts with regard to magnitude of platform affected than the Proposed Action. The Proposed Action would have more moderate impacts with regard to visibility conditions, angles of observation, magnitude of project components visible, magnitude of duration of view and perceived scale than the Longhorn Variation.

Table 3-154. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Horn Butte Alternative



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-002 Willow Creek															66/M	C	C	H	C	M	H
BA-003 Longhorn															81/H	C	C	H	C	M	H
BA-004 Butter Creek															2/N	C	NC	None	NC	N	None
BA-006 Coombs															38/L	C	NC	None	NC	N	None
CE-002 Willow Creek															32/L	N/A	N/A	None	N/A	N	None
CE-003 Longhorn															48/M	N/A	N/A	None	N/A	N	None
Stationary Viewing Platforms																					
1-5 Oregon Trail Fourmile Canyon Interpretive Site	None	None	None	None							None	None	None	None							
2-10 Northern Terminus - Boardman Generating Plant	H	H	M	L							4/N	40/L	M	N							
2-15 Boardman Conservation Area - Immigrant Lane	N	H	L	M							1/N	30/L	N	M							
2-16 Lindsay Prairie Preserve	None	M	None	M							None	53/M	None	L							
2-17 Boardman Research Natural Area - Bombing Range Road	None	L	None	N							None	50/M	None	N							
2-20 Butter Creek Junction	None	None	None	None							None	None	None	None							
2-22 Well Spring Oregon Trail Site	N	M	N	M							N	12/N	N	M							
Linear Viewing Platforms																					
Blue Mountain Scenic Byway	M	H	M	M	90/H	13/N	75/M	25/L	29/L	12/N			M	L							
Oregon National Historic Trail [1]	H	H	H	L	12/N	88/H	18/N	82/H	14/N	61/M			H	M							
SR-74	H	H	M	H	73/M	27/L	75/M	25/L	24/L	11/N			L	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Table 3-155. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Longhorn Alternative

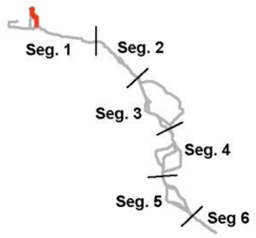
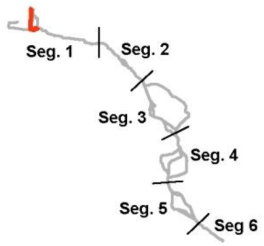
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-001 Columbia River Valley															83/H	C	NC	None	NC	N	None
BA-003 Longhorn															78/M	C	C	H	C	L	H
BA-004 Butter Creek															3/N	C	NC	None	C	L	None
BA-006 Coombs															29/L	C	NC	None	NC	N	None
BR-001 Columbia River Valley															96/H	N/A	N/A	None	N/A	N	None
Stationary Viewing Platforms																					
2-20 Butter Creek Junction	None	None	None	None							None	None	None	None							
2-23 Wilson Lane Southeast	None	H	None	M							None	39/L	None	L							
Linear Viewing Platforms																					
I-84	H	H	H	H	16/N	83/H	16/N	80/H	13/N	75/M			M	L							
Oregon National Historic Trail [1]	H	H	H	H	21/L	79/M	29/L	71/M	22/L	54/M			H	M							
Lewis and Clark Trail Scenic Byway [2]	None	H	None	L	None	100/H	None	100/H	None	67/M			None	N							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho. [2] Viewing platform occurs in Washington.

Table 3-156. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Longhorn Variation

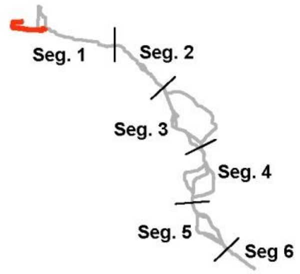


	Sensitive Viewing Platforms: Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Scenic Quality: Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-001 Columbia River Valley															87/L	C	NC	None	NC	N	None
BA-003 Longhorn															86/H	C	C	H	C	L	H
BA-004 Butter Creek															2/N	C	NC	None	NC	N	None
BA-006 Coombs															35/L	C	NC	None	NC	N	None
BR-001 Columbia River Valley															96/H	N/A	N/A	None	N/A	N	None
Stationary Viewing Platforms																					
2-16 Lindsay Prairie Preserve	None	H	None	L							None	55/M	None	N							
2-17 Boardman Research Natural Area - Bombing Range Road	H	H	M	M							5/N	44/M	H	M							
2-20 Butter Creek Junction	None	None	None	None							None	None	None	None							
2-22 Well Spring Oregon Trail Site	None	None	None	None							None	None	None	None							
2-23 Wilson Lane Southeast	H	H	M	M							10/N	37/L	M	M							
Linear Viewing Platforms																					
I-84	H	H	H	H	27/L	73/M	25/L	75/M	21/L	68/M			M	L							
Lewis and Clark Trail Scenic Byway [2]	None	H	None	L	None	100/H	None	100/H	None	64/M			None	N							
Oregon National Historic Trail [1]	H	H	H	H	9/N	91/H	8/N	92/H	7/N	82/H			H	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho. [2] Viewing platform occurs in Washington.

Table 3-157. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Section of the Proposed Action Equivalent to the Horn Butte and Longhorn Alternatives and Longhorn Variation



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-002 Willow Creek															67/M	C	C	H	C	M	H
BA-003 Longhorn															88/H	C	C	H	C	M	H
BA-004 Butter Creek															2/N	C	NC	None	C	L	None
BA-006 Coombs															38/L	C	NC	None	C	L	None
CE-002 Willow Creek															32/L	N/A	N/A	None	N/A	L	None
CE-003 Longhorn															62/M	N/A	N/A	None	N/A	L	None
Stationary Viewing Platforms																					
1-5 Oregon Trail Fourmile Canyon Interpretive Site	None	None	None	None							None	None	None	None							
2-10 Northern Terminus – Boardman Generating Plant	H	H	H	M							6/N	51/M	M	N							
2-15 Boardman Conservation Area – Immigrant Lane	N	H	L	M							1/N	41/M	N	M							
2-16 Lindsay Prairie Preserve	None	M	None	M							None	53/M	None	L							
2-17 Boardman Research Natural Area – Bombing Range Road	None	L	None	N							None	49/M	None	N							
2-18 Boardman Conservation Area – Tower Road South	None	H	None	N							None	61/M	None	N							
2-20 Butter Creek Junction	None	None	None	None							None	None	None	None							
2-22 Well Spring Oregon Trail Site	None	M	None	M							<1/N	12/N	None	M							
Linear Viewing Platforms																					
Blue Mountain Scenic Byway	M	H	M	M	90/H	14/N	75/M	25/L	14/N	5/N			M	L							
Oregon National Historic Trail [1]	H	H	H	H	11/N	89/H	17/N	83/H	13/N	61/M			H	M							
SR-74	H	H	H	H	67/M	33/L	74/M	26/L	83/M	17/N			L	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Segment2—Blue Mountains Segment

Summary of Direct Impacts—Glass Hill Alternative

The following information provides a succinct summary of potential impacts for the Glass Hill Alternative. The information is organized based on the general headings provided in Table 3-158.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers and the associated removal of patchy spruce and fir forest vegetation within the ROW, the magnitude of impact on the scenic quality would be high in the Blue Mountain Forest (BA-011) VAU and moderate in the Grand Ronde River (BA-018) VAU. The landscape within the other two VAUs within the analysis area of the Glass Hill Alternative would have no perceived change in scenic quality within the foreground of the Glass Hill Alternative alignment.

Middleground: Within the middleground, views of the project components would be limited by the evergreen forest vegetation and rolling landforms. Impacts to scenic quality from within the middleground of the alignment would be negligible or no perceived change in the scenic quality.

Landscape Character

The magnitude of change in landscape character that would be associated with the Glass Hill Alternative project components would range from negligible to none because there would be no perceived change in the landscape character.

Stationary Viewing Platforms

Where visible, impacts to people from five of the six stationary platforms would be low to negligible with regard to angles of observation, amounts of project visible, and the scale of the Glass Hill Alternative project components. These impacts would be relatively consistent in both the foreground and middleground of the respective platforms. The project components would not be visible from 50 percent of the stationary platforms within the analysis area for this alternative. From the Elk Song Ranch stationary platform (4-55), the Glass Hill Alternative project components would be predominantly skylined, resulting in a high visibility condition impact.

Linear Viewing Platforms

Foreground: People traveling along the four linear platforms associated with the Glass Hill Alternative would not see any evidence of the project components within the foreground of these platforms.

Middleground: Where visible, impacts with the middleground of the linear platforms would be negligible with regard to scale because the project components would not attract attention. The visual impacts in the middleground of the Glass Hill Alternative would range from low to high with respect to the viewer's perspective of the visibility conditions of the project components, the angles of observation, and the duration of view from State Highway 244 or the Oregon National Historic Trail. In the middleground distance zone of these linear platforms, there would be a high level of impact relevant to how many miles the project components would be seen from State Highway 244 or the Oregon National Historic Trail. Specifically anyone travelling in the middleground of the project components along State Highway 244 or the Oregon National Historic Trail would be able to see at least some portion of the Glass Hill Alternative for the entire time they are on the highway/ trail respectively. The project components would not be visible in the middleground from 50 percent of the linear platforms associated with this alternative.

Special Management Areas

There are no special management areas impacted by this alternative.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Glass Hill Alternative

The following information provides a succinct summary of potential impacts for section of the Proposed Action equivalent to the Glass Hill Alternative. The information is organized based on the general headings provided in Table 3-159.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers and the associated removal of patchy spruce and fir forest vegetation within the ROW, the magnitude of impact on the scenic quality would be high in the Blue Mountain Forest (BA-011) VAU and moderate Grand Ronde River (BA-018) VAU. The landscape within the other two VAUs within the analysis area of the Proposed Action would have negligible to no perceived change in scenic quality within the foreground of the Proposed Action.

Middleground: Within the middleground, views of the project components would be limited by the evergreen forest vegetation and rolling landforms. Impacts to scenic quality from within the middleground of the alignment would range from low to negligible to no perceived change in the scenic quality.

Landscape Character

The magnitude of change in landscape character that would be created by the project components of the Proposed Action would be high in the Blue Mountain Forest (BA-011) VAU due to the dominant scale of the transmission line towers and the associated removal of forest vegetation in comparison to the landforms, vegetation, and built features found in the existing landscape. There would be no perceived change in landscape character in the other three VAUs within the analysis area of the Proposed Action.

Stationary Viewing Platforms

There would be no impacts to people from four of the seven stationary platforms because the Proposed Action project components would not be visible from these locations. The project components would be visible from the remaining three stationary platforms (4-28 Morgan Lake Park, 4-3 Bird Track Springs USFS Campground, and 4-55 Elk Song Ranch) and people's views at these locations would be impacted. Perceived impacts from these three stationary platforms associated with visibility and scale would range from low to moderate, indicating that the project components would be predominantly backdropped or equally skylined and back dropped by landforms/vegetation, and range from visually subordinate to visually prominent in the landscape. The angle of observation impacts from these three stationary platforms would vary from negligible to high, with the highest impact at the Elk Song Ranch platform (4-55). The amount of project components visible from these platforms would be negligible to low, with less than 40 percent of the project components visible.

Linear Viewing Platforms

People traveling along four of the six linear platforms would not see any evidence of the Proposed Action project components within the foreground or middleground of the platforms.

Foreground: The two linear platforms that would include views of this alignment are the Oregon National Historic Trail and State Highway 244. Impacts to the views from people traveling along the Oregon National Historic Trail would be negligible to low within the foreground, and State Highway 244 would not experience any impacts within the foreground.

Middleground: People's views from both Oregon National Historic Trail and State Highway 244 would be impacted within the middleground, including low to high impacts associated with visibility conditions, angles of observation, and the amount of the platforms that would have views of the project components. From these two linear platforms, the perceived scale of the project components would be low to negligible, meaning that the project components would range from visually subordinate to not visually evident in the landscape. People along both of these platforms would be highly impacted with respect to the amount of project components visible from the platforms. From these platforms, people would see 99-100 percent of the project components within the middleground.

Special Management Areas

There are no special management areas impacted by this section of the Proposed Action.

Comparison of Glass Hill Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Glass Hill Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Glass Hill Alternative would have 37 percent more highly impacted acres than the Proposed Action. This alternative would have 20 moderately impacted acres, as compared to no moderately impacted acres for the equivalent section of the Proposed Action.

Landscape Character

Glass Hill Alternative would have 5.7 percent more highly impacted acreage than the Proposed Action. Neither alignment would have moderate impacts to landscape character.

Stationary Viewing Platforms

Glass Hill Alternative would have more high impacts with regard to visibility conditions than the Proposed Action. The equivalent section of the Proposed Action would have more high impacts with regard to angles of observation. Glass Hill Alternative would have no moderate impacts with regard to viewers at the stationary platforms. The Proposed Action would have more moderate impacts with regard to visibility conditions, angles of observation, and perceived scale.

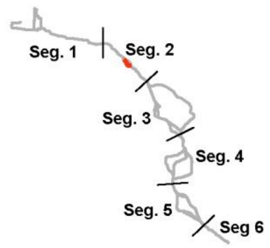
Linear Viewing Platforms

The Glass Hill Alternative would have more high impacts with regard to magnitude of platform affected and magnitude of duration of view than the Proposed Action. The equivalent section of the Proposed Action would have more high impacts with regard to magnitude of project components visible than the Glass Hill Alternatives. The neither alternative would have moderate impacts with regard to viewers at the linear platforms within the respective alternative's analysis area.

Special Management Areas

There are no special management areas impacted by either alternative.

Table 3-158. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Glass Hill Alternative

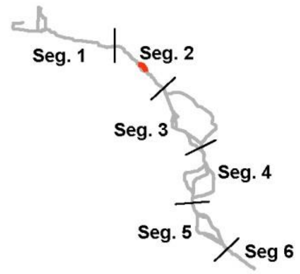


	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-011 Blue Mountains Forest															52/M	B	B	H	NC	N	H
BA-012 Grand Ronde Valley															0/None	C	NC	None	NC	None	None
BA-014 Blue and Wallowa Foothills															0/None	B	NC	None	NC	None	None
BA-018 Grand Ronde River															22/L	A	A	M	NC	N	None
Stationary Viewing Platforms																					
4-19 Hilgard Junction State Park	None	None	None	None							None	None	None	None							
4-26 Ladd Marsh Wildlife Area - Foothill Rd	None	None	None	None							None	None	None	None							
4-28 Morgan Lake Park	None	L	None	N							None	3/N	None	L							
4-3 Bird Track Springs USFS Campground	None	H	None	N							None	29/L	None	N							
4-40 Spring Creek USFS Campground	None	None	None	None							None	None	None	None							
4-55 Elk Song Ranch	H	L	L	N							2/N	1/N	L	N							
Linear Viewing Platforms																					
Grande Tour Route	None	None	None	None	None	None	None	None	None	None			None	None							
I-84	None	None	None	None	None	None	None	None	None	None			None	None							
Oregon National Historic Trail [1]	None	L	None	L	None	100/H	None	100/H	None	21/L			None	N							
SR-244	None	H	None	H	None	100/H	None	100/H	None	29/L			None	N							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Table 3-159. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Section of the Proposed Action Equivalent to the Glass Hill Alternative



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-011 Blue Mountains Forest															52/M	B	B	H	B	L	H
BA-012 Grand Ronde Valley															0/None	C	NC	None	NC	None	None
BA-014 Blue and Wallowa Foothills															0/None	B	NC	None	NC	None	None
BA-018 Grand Ronde River															23/L	A	A	M	NC	N	None
Stationary Viewing Platforms																					
4-19 Hilgard Junction State Park	None	None	None	None							None	None	None	None							
4-26 Ladd Marsh Wildlife Area - Foothill Road	None	None	None	None							None	None	None	None							
4-28 Morgan Lake Park	None	M	None	M							None	16/N	None	L							
4-3 Bird Track Springs USFS Campground	None	L	None	N							None	L	None	N							
4-40 Spring Creek USFS Campground	None	None	None	None							None	None	None	None							
4-55 Elk Song Ranch	L	M	N	H							N	N	N	M							
4-51 La Grande	None	None	None	None							None	None	None	None							
Linear Viewing Platforms																					
Grande Tour Route	None	None	None	None	None	None	None	None	None	None			None	None							
Hells Canyon All American Road	None	None	None	None	None	None	None	None	None	None			None	None							
I-84	None	None	None	None	None	None	None	None	None	None			None	None							
Oregon National Historic Trail [1]	N	L	L	L	1/N	99/H	11/N	89/H	3/N	23/L			N	L							
SR-244	None	H	None	H	None	100/H	None	29/L	None	22/L			None	N							
SR-203	None	None	None	None	None	None	None	None	None	None			None	None							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Segment3—Baker Valley Segment

Summary of Direct Impacts—Flagstaff Alternative (including 230-kV Rebuild)

The following information provides a succinct summary of potential impacts for the Flagstaff Alternative. The information is organized based on the general headings provided in Table 3-160.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a predominantly high magnitude of change in scenic quality within the foreground of the Flagstaff Alternative alignment in this flat to rolling landscape in the Blue and Wallowa Foothills (BA-014), Baker Valley (BA-015), and Sutton Creek (BA 024) VAUs. There would be no perceived change in scenic quality in the other five VAUs within the analysis area of the Flagstaff Alternative.

Middleground: Within the middleground, views of the project components would be limited by increased distance from the Flagstaff Alternative, and the magnitude of change in scenic quality would be negligible.

Landscape Character

The magnitude of change in landscape character would be high due to the dominant scale of the transmission line towers in comparison to the flat to rolling landforms, low sage steppe and agricultural vegetation, and built features found in the existing landscape in the Flagstaff Alternative analysis area in Blue and Wallowa Foothills (BA-014), Baker Valley (BA-015), and Sutton Creek (BA 024) VAUs. There would be no perceived change in landscape character in the other five VAUs within the analysis area of the Flagstaff Alternative.

Stationary Viewing Platforms

There would be no impacts to people's views from four of the eleven stationary platforms associated with the Flagstaff Alternative because the project components would not be visible from these locations. Only one of the affected stationary platforms (5-25c Oregon Trail ACEC - NHOTIC/Flagstaff Hill North) would have views of the project components in the foreground, with impacts ranging from low to moderate. Impacts in the middleground of the seven affected stationary platforms would range from negligible to moderate, but would be predominantly low.

Linear Viewing Platforms

Foreground: There would be no impacts to people's views from Alder Creek Road because the Flagstaff Alternative would not be visible from this location. Impacts to people's views from the remaining eight linear platforms would vary from negligible to high. Six of the eight affected linear platforms would have views of the project components in the foreground. People travelling along two of the platforms (I-84 and Oregon National Historic Trail) would see predominantly skylined project components in the foreground, resulting in high impacts associated with visibility conditions. From three of the linear platforms (Oregon National Historic Trail, Goodale's Cutoff Study Trail, and State Highway 203), people would also experience high impacts related to predominantly head-on views of the project components. From the Oregon National Historic Trail, people along the trail would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from this platform.

Middleground: People traveling along four of the linear platforms (Hells Canyon All American Road, Oregon National Historic Trail, Goodale's Cutoff Study Trail, and State Highway 203) within the analysis area of the Flagstaff Alternative would experience a high degree of impact in the middleground relating to the angle of observation because people's views of the project components would be predominantly head-on. From three linear platforms (Goodale's Cutoff Study Trail, Snake River-Mormon Basin Back Country Byway, and State Highway 203), the amount of the project that people would see in the middleground would be high, including views of 84-91 percent of the surrounding project components. In addition, people would experience high impacts associated with two linear platforms (Oregon National Historic Trail and Snake River-Mormon Basin Backcountry Byway) with regard to the amount of the linear platforms that would have views of the project components. Approximately 84-88 percent of these two linear platforms would experience views of the project in the middleground.

Special Management Areas

The Oregon Trail and Powder River ACECs would be within the analysis area for this alignment. Only one of the SMAs (Oregon Trail ACEC) would include views of the project components, with impacts ranging from low to moderate.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Flagstaff Alternative (including 230-kV Rebuild)

The following information provides a succinct summary of potential impacts that would be associated with the section of the Proposed Action in comparison to the Flagstaff Alternative. The information is organized based on the general headings provided in Table 3-161.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality within the foreground of the equivalent section of the Proposed Action to the Flagstaff Alternative alignment in Blue and Wallowa Foothills (BA-014), Baker Valley (BA-015), and Virtue Flat (BA 021) VAUs. There would be no perceived change in scenic quality in the other five VAUs within the analysis area of the Proposed Action.

Middleground: Within the middleground, views of the project components would be somewhat limited by increased distance from the Proposed Action project components and impacts to scenic quality would range from low to moderate in Blue and Wallowa Foothills (BA-014), Virtue Flat (BA 021), and Juniper and Sugarloaf Mountains (BA 025) VAUs. There would be no perceived change in scenic quality in the other five VAUs within the analysis area of the Proposed Action.

Landscape Character

The magnitude of change in landscape character associated with the Proposed Action project components would be high in the Blue and Wallowa Foothills (BA-014), Baker Valley (BA-015), and Virtue Flat (BA 021) VAUs due to the dominant scale of the transmission line towers in comparison to the rolling landforms, low sage steppe vegetation, and limited amount of built features found in the existing landscape. There would be no perceived change in the landscape quality in the other five VAUs within the analysis area of the Proposed Action.

Stationary Viewing Platforms

There would be no impacts to people's views from two of the eleven stationary platforms because the project components would not be visible from these locations. One of the affected platforms (5-60 NHOTIC Entrance State Highway 86) would include views of the project within the foreground, with impacts ranging from negligible to high. People's views from the NHOTIC Entrance State Highway 86 would include predominantly skylined views of the project components, resulting in a high degree of impact to visibility conditions. Views from this platform would also be subject to high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from the NHOTIC Entrance SH 86stationary platform.

Linear Viewing Platforms

There would be no impacts to people's views from Alder Creek Road because the project components would not be visible from this location. Impacts to people's views from the six affected linear platforms (I-84, Hells Canyon All American Road, Oregon National Historic Trail, Goodale’s Cutoff Study Trail, Snake River-Mormon Basin Back Country Byway, and State Highway 203) associated with the Proposed Action would vary from negligible to high. All six of the affected linear platforms would have views of the project components in the foreground and middleground.

Foreground: People's views of the project components would be predominantly skylined in the foreground from all six of the linear platforms(I-84, Hells Canyon All American Road, Oregon National Historic Trail, Goodale’s Cutoff Study Trail, Snake River-Mormon Basin Back Country Byway, and State Highway 203), which would result in high impacts to visibility conditions. People traveling along five of the platforms would also experience high impacts related to predominantly head-on views of the project components. Those travelling along one of the linear platforms (Oregon National Historic Trail) would also experience a high degree of impact in the foreground associated with the amount of view, with views of the project components from approximately 87 percent of the total length and time travelled for the platform within the analysis area for this alignment. Four of the six affected linear platforms(Hells Canyon All American Road, Oregon National Historic Trail, Goodale's Cutoff Study Trail, and Snake River-Mormon Basin Back Country Byway), would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from these platforms.

Middleground: People's views of the project components would be predominantly skylined in the middleground from two of the linear platforms (Goodale's Cutoff and Hells Canyon All American Road), which would result in high impacts to visibility conditions. People traveling along five of the platforms (Hells Canyon All American Road, Oregon National Historic Trail, Goodale's Cutoff Study Trail, Snake River-Mormon Basin Back Country Byway, and State Highway 203) would also experience high impacts related to predominantly head-on views of the project components. The amount of the project components that people would see from four of the linear platforms (Hells Canyon All American Road, Oregon National Historic Trail, Goodale's Cutoff Study Trail, Snake River-Mormon Basin Back Country Byway, and I-84) would be highly impacted, with more than 83 percent of project components being visible from the platforms. Those travelling along four of the linear platforms (State Highway 203, Oregon National Historic Trail Snake River-Mormon Basin Back Country Byway, and I-84) would also experience a high degree of impact associated with the amount of view because people would experience views of the project components from approximately 84-90 percent of the total length travelled for the platform within the analysis area for this alignment. People travelling along one of the linear platforms (SR 203) would also experience a high degree of impact in the middleground associated with the amount of view, with views of the project components from approximately 83 percent of the total length and time travelled for the platform within the analysis area for the Proposed Action.

Special Management Areas

The Oregon Trail and Powder River ACECs would include views of the project components, with impacts ranging from low to high. The scale of the project would be visually dominant from the Oregon Trail ACEC in the foreground, and the perceived scale of the project would be high from this ACEC. People's views from a portion of the Powder River ACEC would include predominantly skylined views of the project components in the middleground, resulting in a high impact to this SMA. The Powder River ACEC would also experience high impacts related to the high amount of project components visible (97 percent).

Comparison of Flagstaff Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Flagstaff Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The equivalent section of the Proposed Action would have 9 percent more highly impacted acres than the Flagstaff Alternative. The Proposed Action would also have more than 40,000 moderately impacted acres, as compared to no moderately impacted acres for the Flagstaff Alternative.

Landscape Character

The Flagstaff Alternative would have almost 2 percent more highly impacted acreage than the Proposed Action. Neither alignment would have moderate impacts to landscape character.

Stationary Viewing Platforms

The Flagstaff Alternative would have no high impacts with regard to viewers at the stationary platforms. The equivalent section of the Proposed Action would have more high impacts with regard to visibility conditions and perceived scale than the Flagstaff Alternative. The Flagstaff Alternative would have no moderate impacts with regard to viewers at the stationary platforms. The equivalent section of the Proposed Action would have more moderate impacts with regard to visibility conditions, angles of observation, and perceived scale compared to the Flagstaff Alternative.

Linear Viewing Platforms

The Flagstaff Alternative would have no high impacts with regard to viewers on the linear platforms. This alternative would have more moderate impacts than the equivalent section of the Proposed Action with regard to magnitude of project components visible, magnitude of platform affected, and magnitude of duration of view .The Proposed Action would have more high impacts with regard to all of the factors of viewer sensitivity, including visibility conditions, angles of observation, magnitude of project components visible, magnitude of platform affected, magnitude of duration of view and perceived scale than the Flagstaff Alternative.

Special Management Areas

The equivalent section of the Proposed Action would have more high impacts than the Flagstaff Alternative with regard to visibility conditions and perceived scale from the Oregon Trail ACEC. As well, the Proposed Action would have more moderate impacts with regard to visibility conditions and perceived scale from the Powder River ACEC than the Flagstaff Alternative.

Summary of Direct Impacts—Burnt River Mountain Alternative

The information provides a succinct summary of potential impacts for the Burnt River Mountain Alternative. The information is organized based on the general headings provided in Table 3-162.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a predominantly high magnitude of change in scenic quality within the foreground of the Burnt River Mountain Alternative alignment in this steeply rolling landscape.

Middleground: Within the middleground, views of the project components would be limited by increased distance from the project components, and the magnitude of change would be predominantly negligible.

Landscape Character

The magnitude of change in landscape character would be high due to the dominant scale of the transmission line towers in comparison to the steeply rolling landforms, low sage steppe vegetation, and clustered built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There would be no impacts to people's views from Burnt River VRM II Area (5-81) because the Burnt River Mountain Alternative would not be visible from this location. Impacts to the three affected stationary platforms would generally range from negligible to moderate in the foreground, with only one high impact. A high impact would be associated with Oregon Trail Crossing –Weatherby (5-31), from which the scale of the project components would visually dominate people's views from the platform.

Middleground: Impacts in the middleground of the three affected stationary platforms (5-81 Burnt River VRM II Area, 5-31 Oregon Trail Crossing –Weatherby, and 5-82 Durkee Community) would range from negligible to moderate.

Linear Viewing Platforms

Foreground: There would be no impacts to people's views from two of the five linear platforms because the Burnt River Mountain Alternative would not be visible from these locations. Impacts to people's views from the three affected linear platforms (I-84, Oregon National Historic Trail, and Manning Creek Road) would vary from negligible to high. Along Oregon National Historic Trail and I-84 people would have views of the project components in the foreground. People's views of the project components would be predominantly skylined in the foreground from these two platforms, resulting in high impacts associated with visibility conditions. People traveling along I-84 and the Oregon National Historic Trail would also experience high impacts related to predominantly head-on views of the project components. People on this portion of the Oregon National Trail would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from this platform.

Middleground: People traveling along Manning Creek Road would experience a high degree of impact in the middleground relating to the angle of observation because people's views of the Burnt River Mountain Alternative project components would be predominantly head-on. From I-84 and the Oregon National Historic Trail, the amount of the project that people would see in the middleground would be high, including views of 81-83 percent of the surrounding project components. In addition, people would experience high impacts along Manning Creek Road with regard to the amount of the linear platform that would have views of the project components. It is anticipated that 100 percent of travelers along this portion of Manning Creek Road would experience views of the project in the middleground.

Special Management Areas

The Oregon Trail ACEC would include views of the project components, with impacts ranging from low to moderate. The scale of the project would be visually dominant from this ACEC, and people's views would be high in terms of the perceived scale of the project components associated with the Burnt River Mountain Alternative.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Burnt River Mountain Alternative

The following information provides a succinct summary of potential impacts for the equivalent section of the Proposed Action to the Burnt River Mountain Alternative. The information is organized based on the general headings provided in Table 3-163.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality within the foreground of the Proposed Action in this moderate to steeply rolling landscape.

Middleground: Within the middleground, views of the project components would be somewhat limited by increased distance from the Proposed Action and impacts would be predominantly low.

Landscape Character

The magnitude of change in landscape character would be high due to the dominant scale of the transmission line towers in comparison to the moderate to steeply rolling landforms, low sage steppe vegetation, and limited amount of built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There would be no impacts to people's views from two of the four stationary platforms because the Proposed Action would not be visible from these locations. Impacts to people's views from the two affected linear platforms (5-26 Oregon Trail ACEC – Hill Creek Road and 5-31 Oregon Trail Crossing–Weatherby) would vary from negligible to high.

Middleground: Impacts in the middleground of the two affected stationary platforms (5-26 Oregon Trail ACEC – Hill Creek Road and 5-82 Durkee Community) would range from negligible to moderate.

Linear Viewing Platforms

Foreground: All three of the linear platforms (I-84, Manning Creek Road, and Oregon National Historic Trail) would have views of the Proposed Action in the foreground and middleground. People's views of the project components would be predominantly skylined in the foreground from two of the platforms (Manning Creek Road and Oregon National Historic Trail), resulting in high impacts to visibility conditions. People traveling along the Manning Creek Road would also experience high impacts related to predominantly head-on views of the project components. People traveling along the Oregon National Historic Trail would also experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from the platforms.

Middleground: In the middleground, high impacts would be associated with only one linear platform, (Manning Creek Road), from which people would see 81 percent of the Proposed Action within the middleground.

Special Management Areas

Views from the Oregon Trail ACEC would include a portion of the project components associated with the Proposed Action, with impacts ranging from low to moderate.

Comparison of Burnt River Mountain Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Burnt River Mountain Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

Burnt River Mountain Alternative would have 2.5 times more highly impacted acres than the Proposed Action. The Proposed Action would have 86 percent more moderately impacted acres than the Burnt River Mountain Alternative.

Landscape Character

The Proposed Action would have 2.4 times more highly impacted acreage than the Burnt River Mountain Alternative. The Burnt River Mountain Alternative would have more than 300 moderately impacted acres, as compared to no moderately impacted acres for the equivalent section of the Proposed Action.

Stationary Viewing Platforms

The Burnt River Mountain Alternative would have more high impacts with regard to magnitude of platform affected and perceived scale than the Proposed Action, which would have more high impacts with regard to visibility conditions. The Burnt River Mountain Alternative would have more moderate impacts with regard to magnitude of duration of view and perceived scale than the Proposed Action. The Proposed Action in comparison to the Burnt River Mountain Alternative would have more moderate impacts with regard to visibility conditions, angle of observation, and magnitude of platform affected.

Linear Viewing Platforms

Burnt River Mountain Alternative would have more high impacts with regard to visibility conditions, angles of observation, and magnitude of project components visible than the equivalent section of the Proposed Action. The Proposed Action would have more high impacts with regard to perceived scale than the Burnt River Mountain Alternative.

The Burnt River Mountain Alternative would have more moderate impacts with regard to magnitude of duration of view than the Proposed Action. The Proposed Action would have more moderate impacts with regard to visibility conditions, angles of observation, magnitude of project components visible, magnitude of platform affected and perceived scale in comparison to the Burnt River Mount Alternative.

Special Management Areas

The Burnt River Mountain Alternative would have more moderate impacts with regard to angles of observation and perceived scale as compared to the equivalent section of the Proposed Action. The Proposed Action would have more moderate impacts with regard to visibility conditions, and magnitude of project components visible from the Oregon Trail ACEC than the Burnt River Mountain Alternative.

Summary of Direct Impacts—Timber Canyon Alternative

The following information provides a succinct summary of potential impacts for the Timber Canyon Alternative. The information is organized based on the general headings provided in Table 3-164.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers and the associated removal of dense spruce and fir forest vegetation along portions of the alignment, 7 of the 11 VAUs would experience a high magnitude of change in scenic quality within the foreground of the Timber Canyon Alternative alignment. These VAUs include Eagle Creek (BA-010), Wallowa Mountains (BA -013), Blue and Wallowa Foothills (BA-014), Pyles Canyon and Thief Valley (BA-016), Eagle Valley (BA-022), Eagle Valley Foothills (BA-023), and Juniper and Sugarloaf Mountains (BA-025) VAUs.

Middleground: Within the middleground, views of the project components would be limited by steeply rolling landforms and evergreen forest vegetation in some areas. Impacts to scenic quality from within the middleground of the alignment would range from none to moderate, but would be predominantly negligible.

Landscape Character

The magnitude of change in landscape character associated with the project components would be predominately high due to the dominant scale of the transmission line towers and the associated removal of forest vegetation in comparison to the landforms, vegetation, and built features found in the existing landscape in the seven VAUs noted above with high magnitude of change in scenic quality.

Stationary Viewing Platforms

Foreground: There would be no impacts to people from the six stationary platforms associated with the Timber Canyon Alternative because the project components would not be visible from these locations within the foreground distance zone.

Middleground: Although impacts in the middleground to three of the six stationary platforms would range from negligible to high, the predominant level of impact would be low to negligible. Views of the project components would be predominantly skylined from the City of North Powder (4-10), and people from this community would experience high impacts with regard to visibility conditions.

Linear Viewing Platforms

Foreground: Of the 15 linear platforms associated with the Timber Canyon Alternative, 14 would have views of the project components in the foreground. Although impacts associated with visibility conditions in the foreground of these linear platforms would range from moderate to high, the level of impact to 9 of the 14 KOPs would be high because people's views of the project components would be predominantly skylined. The angle of view in the foreground from 10 of the 14 platforms would be predominantly head-on, resulting in a high magnitude of impact to people travelling along these platforms The amount of the project that people would see in the foreground would be predominantly negligible, with only the Grand Tour Auto Route that would be highly impacted (83 percent of project components being visible from this platform).

Three of the 14 linear platforms (Daly Creek Road, FS 250, and Manning Creek Road) would have high impacts in the foreground, from which people travelling along these platforms would see project components along 88-100 percent of the platforms. The duration of view in the foreground would be high along Daly Creek Road and FS 250, which would result in views of the project components for 89 to 100 percent of the total travel time on these platforms in this alternative's analysis area. Eight of the 14 linear platforms would experience impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from these platforms.

Middleground: People traveling along all 15 of the linear platforms associated with the Timber Canyon Alternative would see evidence of the project components within the middleground of the platforms. People's views of the project components would be predominantly skylined in three of the platforms in the middleground, resulting in high impacts to visibility conditions. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for eight of the fifteen linear platforms. The amount of the project that people would see from several of the linear platforms would also highly impact views in the middleground, with more than 81 percent of project components being visible from four linear platforms and with project components being visible along 81-100 percent of four of the platforms. Two of the 14 linear platforms (Hell's Canyon Scenic Byway and Powder River Wild and Scenic River/Thief Valley Rd) would experience high impacts associated with the scale of the project components in the middleground because these components would visually dominate people's views from these platforms.

Special Management Areas

The Powder River ACEC would include views of the Timber Canyon Alternative with impacts ranging from negligible to moderate.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Timber Canyon Alternative

The following information provides a succinct summary of potential impacts for the equivalent section of the Proposed Action that would compare to the Timber Canyon Alternative. The information is organized based on the general headings provided in Table 3-165.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers in comparison to the flat to rolling landforms and low sage steppe vegetation, the existing landscape would experience a predominantly high magnitude of change in scenic quality within the foreground of the Proposed Action alignment in the Blue and Wallowa Foothills (BA-014), Baker Valley (BA-015), Virtue Flat (BA-021), Juniper and Sugarloaf Mountains (BA-025), and Durkee Creek (BA-026) VAUs.

Middleground: Within the middleground, views of the Proposed Action would be limited by the increased distance and the variable rolling landforms, resulting in a predominantly low to moderate magnitude of impact.

Landscape Character

The magnitude of change in landscape character associated with the Proposed Action would be high due alignment in the Blue and Wallowa Foothills (BA-014), Baker Valley (BA-015), Virtue Flat (BA-021), Juniper and Sugarloaf Mountains (BA-025), and Durkee Creek (BA-026) VAUs to the dominant scale of the transmission line towers in comparison to the rolling sage steppe and flat agricultural valley landscapes.

Stationary Viewing Platforms

Foreground: There would be no impacts to people's views from 14 of the 16 stationary platforms associated with the Proposed Action because the project components would not be visible from these locations. Impact to views from two platforms (5-26 Oregon Trail ACEC-Hill Creek Road and 5-60 NHOTIC Entrance State Highway 86) would range from negligible to high.

Middleground: Impacts to people's views in the middleground from 11 of the 14 stationary platforms would range from negligible to high, with high magnitudes of impact occurring from one specific platform (4-10 City of North Powder). From the City of North Powder, people's views would be highly impacted because their views of the project components would be predominantly skylined.

Linear Viewing Platforms

Foreground: People traveling along two of the ten linear platforms associated with the equivalent section of the Proposed Action would not see any evidence of the project components within the foreground of the platforms. Impacts perceived from the affected eight platforms in the foreground would range from negligible to high. People's views in the foreground from seven of the linear KOPs would be of predominantly skylined project components, resulting in high impacts with regard to visibility conditions. A high degree of impacts would also occur associated with the angle of view from seven of the platforms. People travelling along these linear platforms would experience views of the project components in the foreground that would be predominantly head-on. Five of the eight affected linear platforms would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from these platforms.

Middleground: In the middleground, impacts to the ten linear platforms would range from negligible to high. Peoples' views from two of these platforms (Alder Creek Road and Goodale's Cutoff Study Trail) would be of predominantly skylined project components, resulting in high impacts with regard to visibility conditions in the middleground. People travelling along five of the linear platforms would experience predominantly head-on views of project components, resulting in high impacts associated with people's angle of observation. The amount of the project that people would see in the middleground from four of the linear platforms would be highly impacted, with 81-88 percent of project components being visible from these platforms. Those travelling along State Highway 203 would also experience a high degree of impact associated with the amount of view, with views of the project components from approximately 84 percent of the total length and time travelled for the platform within the analysis area for Proposed Action. Views from the Snake River-Mormon Basin Backcountry Byway would experience high impacts associated with the scale of the project components in the middleground because these components would visually dominate people's views from these platforms.

Special Management Areas

The Oregon Trail and Powder River ACECs would include views of the project components, with impacts ranging from low to high. People's views from portions the Oregon Trail ACEC would include predominantly skylined views of the Proposed Action, which would result in a high impact to this SMA in the foreground.

Comparison of Timber Canyon Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Timber Canyon Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Timber Canyon Alternative would have 50 percent more highly impacted acres than the Proposed Action. The Proposed Action would have more than two times more moderately impacted acres than the Timber Canyon Alternative.

Landscape Character

The Timber Canyon Alternative would have 36 percent more acreage of high impacts to landscape character compared to the equivalent section of the Proposed Action. Neither alignment would have moderate impacts to landscape character.

Stationary Viewing Platforms

The Timber Canyon Alternative would have no high or moderate impacts with regard to viewers at the stationary platforms. The Proposed Action would have high impacts with regard to visibility conditions as well as moderate impacts with regard to visibility, angle of observation, and perceived scale as compared to the Timber Canyon Alternative.

Linear Viewing Platforms

The Timber Canyon Alternative would have more high impacts than the equivalent section of the Proposed Action with regard to angle of observation, magnitude of project components visible, magnitude of platform affected, magnitude of duration of view and perceived scale. The Proposed Action would have more high impacts with regard to visibility conditions than the Timber Canyon Alternative.

In addition the Timber Canyon Alternative would have more moderate impacts with regard to visibility conditions, magnitude of duration of view and perceived scale than the equivalent section of the Proposed Action. The Proposed Action would have more moderate impacts with regard to angle of observation, magnitude of project components visible, and magnitude of platform affected than the Timber Canyon Alternative.

Special Management Areas

Timber Canyon Alternative would have more high and moderate impacts with regard to visibility conditions than the equivalent section of the Proposed Action from views from the Powder River ACEC. The Proposed Action would have more moderate impacts with regard to angles of observation and magnitude of project components visible of views from this ACEC than the Timber Canyon Alternative. The Timber Canyon Alternative would not impact views from the Oregon Trail ACEC, while the Proposed Action would have impacts from low to high.

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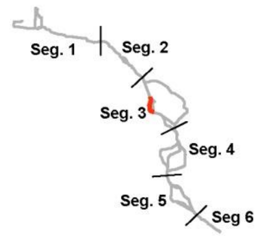
Table 3-160. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Flagstaff Alternative, Including 230-kV Rebuild



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															44/M	B	C	H	NC	N	H
BA-015 Baker Valley															98/H	C	C	H	NC	N	H
BA-016 Pyles Canyon and Thief Valley															None	B	NC	None	NC	None	None
BA-019 Lower Powder Valley															None	C	NC	None	NC	None	None
BA-020 Bowen Valley															43/M	C	NC	None	NC	N	None
BA-021 Virtue Flat															1/N	C	NC	None	NC	N	None
BA-024 Sutton Creek															80/M	C	C	H	NC	N	H
BA-025 Juniper and Sugarloaf Mountains															23/L	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
5-18 Interstate 84 Baker Valley Rest Area	None	N	None	N							None	31/L	None	N							
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South)	None	L	None	N							None	2/N	None	L							
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North)	None	None	None	None							None	None	None	None							
5-25c Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Panorama Point)	L	L	M	N							None	8/N	L	N							
5-25d Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Main Building)	None	L	None	L							None	4/N	None	L							
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment)	None	L	None	L							None	4/N	None	L							
5-32 Oregon Trail Kiwanis Club Memorial	None	L	None	L							None	5/N	None	M							
5-33 Oregon Trail Ruts Interpretive Site	None	L	None	N							None	<1/N	None	L							
5-34 Powder River ACEC	None	None	None	None							None	None	None	None							
5-60 NHOTIC Entrance SH 86	None	None	None	None							None	None	None	None							
5-84 Virtue Flat OHV Area	None	None	None	None							None	None	None	None							
Linear Viewing Platforms																					
Alder Creek Road	None	None	None	None	None	None	None	None	None	None			None	None							
Elkhorn Scenic Byway	None	L	None	L	None	59/M	None	55/M	None	54/M			None	N							
Goodale's Cutoff Study Trail [1]	M	L	H	H	29/L	71/M	36/L	64/M	3/N	6/N			M	L							
Hells Canyon All American Road	L	L	L	H	16/N	84/H	36/L	64/M	22/L	33/L			M	L							

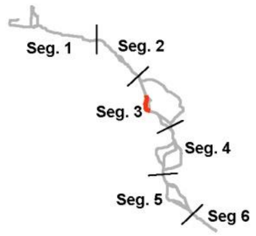
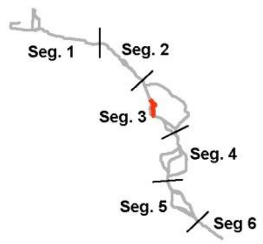
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
I-84	H	L	L	L	24/L	75/M	27/L	76/M	19/N	53/M			L	N							
Journey Through Time Scenic Byway	None	L	None	L	None	8/N	None	39/L	None	40/M			None	N							
Oregon National Historic Trail [1]	H	L	H	H	14/N	18/N	12/N	88/H	5/N	41/M			H	N							
Snake River-Mormon Basin Back Country Byway	L	L	L	L	15/N	85/H	16/N	84/H	11/N	47/M			M	L							
SR-203	M	M	H	H	9/N	91/H	21/L	79/M	13/N	47/M			L	N							
Special Management Areas																					
Oregon Trail ACEC	L	L	M	M							13/N	32/L	M	L							
Powder River ACEC	None	None	None	None							None	None	None	None							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail and Goodale's Cutoff Study Trail occur in Oregon and Idaho.

1 **Table 3-161. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Section of the Proposed Action**
2 **Equivalent to the Flagstaff Alternative, Including 230-kV Rebuild**



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															60/M	B	C	H	C	M	H
BA-015 Baker Valley															90/H	C	C	H	NC	N	H
BA-016 Pyles Canyon and Thief Valley															1/N	B	NC	None	NC	N	None
BA-019 Lower Powder Valley															65/M	C	NC	None	NC	N	None
BA-020 Bowen Valley															0/None	C	NC	None	NC	None	None
BA-021 Virtue Flat															94/H	C	C	H	C	M	H
BA-024 Sutton Creek															43/M	C	NC	N	NC	N	None
BA-025 Juniper and Sugarloaf Mountains															50/M	B	NC	None	B	L	None
Stationary Viewing Platforms																					
5-18 Interstate 84 Baker Valley Rest Area	None	None	None	None							None	None	None	None							
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South)	None	M	None	L							None	16/N	None	L							
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North)	None	None	None	None							None	None	None	None							
5-25c Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Panorama Point)	None	L	None	N							None	1/N	None	N							
5-25d Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Main Building)	None	L	None	N							None	1/N	None	N							
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment)	None	L	None	M							None	15/N	None	M							
5-32 Oregon Trail Kiwanis Club Memorial	None	M	None	M							None	5/N	None	L							
5-33 Oregon Trail Ruts Interpretive Site	None	M	None	L							None	7/N	None	L							
5-34 Powder River ACEC	None	L	None	N							None	21/L	None	N							
5-60 NHOTIC Entrance SH 86	H	H	L	M							3/N	12/N	H	M							
5-84 Virtue Flat OHV Area	None	M	None	M							None	18/M	None	L							
Linear Viewing Platforms																					
Alder Creek Road	None	None	None	None	None	None	None	None	None	None			None	None							
Goodale's Cutoff Study Trail [1]	H	H	H	H	22/L	78/M	27/L	73/M	20/L	54/M			H	M							

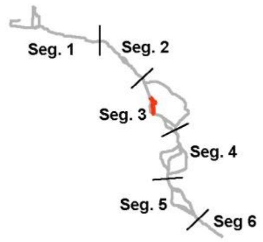
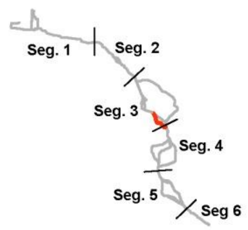
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Hells Canyon All American Road	H	H	H	H	17/N	83/H	25/L	75/M	23/L	54/M			H	M							
I-84	H	L	L	L	15/N	85/H	14/N	86/H	7/N	50/M			L	N							
Oregon National Historic Trail [1]	H	M	H	H	9/N	91/H	10/N	90/H	8/N	6/N			H	M							
Snake River-Mormon Basin Back Country Byway	H	L	H	H	17/N	83/H	20/L	80/H	18/N	59/M			H	M							
SR-203	H	M	H	H	22/L	78/M	16/N	84/H	13/N	66/M			L	N							
Special Management Areas																					
Oregon Trail ACEC	L	M	M	M							65/M	H	M	M							
Powder River ACEC	None	H	None	M							None	97/H	None	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail and Goodale's Cutoff Study Trail occur in Oregon and Idaho.

Table 3-162. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Burnt River Mountain Alternative

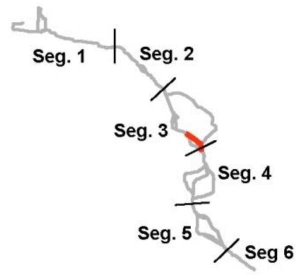


	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															51/M	B	C	M	NC	N	M
BA-025 Juniper and Sugarloaf Mountains															32/L	B	B	H	NC	N	H
BA-026 Durkee Creek															95/H	C	C	H	C	L	H
BA-027 Caribou Bar															59/H	C	C	H	NC	N	H
Stationary Viewing Platforms																					
5-26 Oregon Trail ACEC - Hill Creek Road	M	M	N	M							2/N	8/N	N	L							
5-31 Oregon Trail Crossing - Weatherby	L	M	L	N							14/N	20/N	H	M							
5-81 Burnt River VRM II Area	None	None	None	None							None	None	None	None							
5-82 Durkee Community	None	L	None	M							None	28/L	None	L							
Linear Viewing Platforms																					
Alder Creek Road	None	None	None	None	None	None	None	None	None	None			None	None							
I-84	H	L	H	L	19/N	81/H	32/L	67/M	20/L	43/M			M	L							
Manning Creek Road	None	L	None	H	None	55/M	None	100/H	None	46/M			None	N							
Oregon National Historic Trail [1]	H	L	H	L	17/N	83/H	23/L	77/M	16/N	55/M			H	L							
Snake River-Mormon Basin Back Country Byway	None	None	None	None	None	None	None	None	None	None			None	None							
Special Management Areas																					
Oregon Trail ACEC	L	L	L	M							4/N	1/N	H	M							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Table 3-163. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Section of the Proposed Action Equivalent to the Burnt River Mountain Alternative

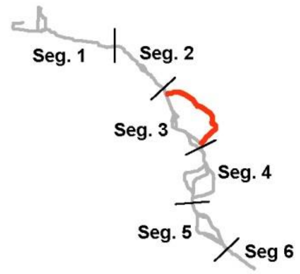


	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															49/M	B	C	H	C	M	H
BA-025 Juniper and Sugarloaf Mountains															37/L	B	B	H	B	L	H
BA-026 Durkee Creek															97/H	C	C	H	C	L	H
BA-027 Caribou Bar															49/M	C	C	H	C	L	H
Stationary Viewing Platforms																					
5-26 Oregon Trail ACEC - Hill Creek Road	M	L	N	M							2/N	5/N	N	N							
5-31 Oregon Trail Crossing - Weatherby	H	None	L	None							2/N	None	L	None							
5-81 Burnt River VRM II Area	None	None	None	None							None	None	None	None							
5-82 Durkee Community	None	M	None	M							None	31/L	None	L							
Linear Viewing Platforms																					
Alder Creek Road	None	None	None	None	None	None	None	None	None	None			None	None							
I-84	M	L	L	L	34/L	65/M	44/M	56/M	24/L	32/L			M	L							
Manning Creek Road	H	M	H	M	18/N	81/H	60/M	40/M	33/L	2/N			M	L							
Oregon National Historic Trail [1]	H	M	L	L	52/M	48/M	55/M	45/M	35/L	29/M			H	L							
Snake River-Mormon Basin Back Country Byway	None	None	None	None	None	None	None	None	None	None			None	None							
Special Management Areas																					
Oregon Trail ACEC	L	L	M	M							41/M		M	L							

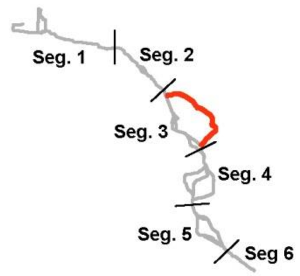
Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

1 **Table 3-164. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Timber Canyon Alternative**



	Sensitive Viewing Platforms: Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Scenic Quality: Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-010 Eagle Creek															46/M	A	A	H	A	L	H
BA-013 Wallowa Mountains															56/M	B	B	H	B	L	H
BA-014 Blue and Wallowa Foothills															61/M	B	C	H	B	L	H
BA-015 Baker Valley															71/M	C	NC	None	NC	N	None
BA-016 Pyles Canyon and Thief Valley															63/M	B	B	H	B	M	H
BA-022 Eagle Valley															96/H	B	B	H	B	M	H
BA-023 Eagle Valley Foothills															70/M	B	B	H	NC	N	H
BA-025 Juniper and Sugarloaf Mountains															44/M	B	B	H	B	M	H
BA-026 Durkee Creek															40/M	C	NC	None	NC	N	None
BA-027 Caribou Bar															4/N	C	NC	None	NC	N	None
FR-025 Juniper and Sugarloaf Mountains															None	N/A	N/A	None	N/A	None	None
Stationary Viewing Platforms																					
4-10 North Powder Community	None	H	None	M							None	6/N	None	N							
4-60 Medical Springs Community	None	None	None	None							None	None	None	None							
5-31 Oregon Trail Crossing - Weatherby	None	None	None	None							None	None	None	None							
5-63 Sparta Community	None	L	None	N							None	9/N	None	N							
5-75 Big Lookout Mountain	None	L	None	M							None	29/L	None	L							
5-82 Durkee Community	None	None	None	None							None	None	None	None							
Linear Viewing Platforms																					
Daly Creek Road	M	L	H	L	53/M	74/M	100/H	None	100/H	None			H	M							
Eagle Creek Road	H	H	M	M	4/N	21/L	24/L	76/M	9/N	22/L			M	L							
FS 250	H	H	L	H	4/N	7/N	95/H	5/N	89/H	22/N			M	M							
FS 67 - Big Creek	H	N	H	N	3/N	10/N	44/M	56/M	12/N	20/L			M	N							
FS 70	H	L	H	H	6/N	17/N	28/L	72/M	15/N	44/M			M	N							
Goodale's Cutoff Study Trail [1]	M	M	H	H	19/N	81/H	22/L	78/M	17/N	30/L			H	M							
Grande Tour Route	M	M	H	H	83/H	51/M	43/M	57/M	34/L	45/M			H	M							
Hells Canyon All American Road	H	M	H	H	5/N	95/H	19/N	81/H	14/N	48/M			H	H							

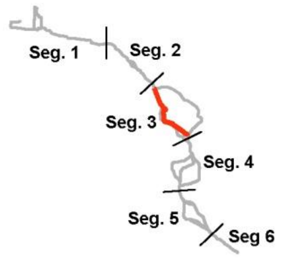


	Sensitive Viewing Platforms: Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Scenic Quality: Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
I-84	None	L	None	L	None	23/L	None	100/H	None	32/L			None	N							
Manning Creek Road	H	M	H	M	65/M	35/L	88/H	11/N	59/M	5/N			M	L							
Oregon National Historic Trail [1]	H	M	H	L	39/L	61/M	20/N	80/M	10N	38/L			H	L							
Powder River Wild and Scenic River Corridor/Thief Valley Reservoir Road	H	H	H	H	8/N	92/H	14/N	86/H	17/N	50/M			H	H							
Snake River-Mormon Basin Back Country Byway	H	M	M	H	8/N	92/H	26/L	74/M	15/N	42/M			H	M							
Sparta Road	M	L	L	H	32/L	68/M	73/M	45/M	52/M	20/L			M	L							
SR-203	M	L	H	M	24/L	76/M	31/L	69/M	21/L	43/M			H	L							
Special Management Areas																					
Powder River ACEC	None	L	None	M							None	67/M	None	N							

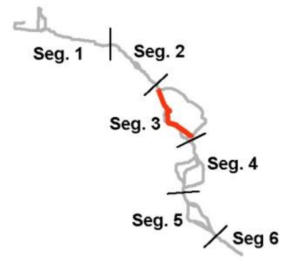
Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail and Goodale's Cutoff Study Trail occur in Oregon and Idaho.

Table 3-165. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Section of the Proposed Action Equivalent to the Timber Canyon Alternative



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-013 Wallowa Mountains															61/M	B	NC	None	NC	N	None
BA-014 Blue and Wallowa Foothills															66/M	B	C	H	C	M	H
BA-015 Baker Valley															86/H	C	C	H	C	L	H
BA-016 Pyles Canyon and Thief Valley															49/M	B	B	M	NC	N	None
BA-019 Lower Powder Valley															65/M	C	NC	None	NC	N	None
BA-020 Bowen Valley															None	C	NC	None	NC	None	None
BA-021 Virtue Flat															94/H	C	C	H	C	M	H
BA-024 Sutton Creek															44/M	C	NC	N	NC	N	None
BA-025 Juniper and Sugarloaf Mountains															42/M	B	B	H	B	L	H
BA-026 Durkee Creek															96/H	C	C	H	C	L	H
BA-027 Caribou Bar															5/N	C	NC	None	NC	N	None
Stationary Viewing Platforms																					
4-10 North Powder Community	None	H	None	L							None	23/L	None	N							
5-18 Interstate 84 Baker Valley Rest Area	None	None	None	None							None	None	None	None							
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South)	None	M	None	L							None	16/N	None	L							
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North)	None	M	None	L							None	8/N	None	L							
5-25c Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Panorama Point)	None	L	None	N							None	<1/N	None	N							
5-25d Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Main Building)	None	L	None	N							None	<1/N	None	N							
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment)	None	L	None	M							None	15/N	None	L							
5-26 Oregon Trail ACEC - Hill Creek Road	L	L	N	L							1/N	3/N	N	N							
5-31 Oregon Trail Crossing - Weatherby	None	None	None	None							None	None	None	None							
5-32 Oregon Trail Kiwanis Club Memorial	None	M	None	M							None	6/N	None	N							
5-33 Oregon Trail Ruts Interpretive Site	None	M	None	L							None	7/N	None	L							



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
5-34 Powder River ACEC	None	L	None	N							None	10/N	None	N							
5-60 NHOTIC Entrance SH 86	H	H	L	M							3/N	12/N	M	L							
5-81 Burnt River VRM II Area	None	None	None	None							None	None	None	None							
5-82 Durkee Community	None	M	None	M							None	31/L	None	L							
5-84 Virtue Flat OHV Area	None	M	None	M							None	18/N	None	L							
Linear Viewing Platforms																					
Alder Creek Road	M	H	H	H	23/L	77/M	25/L	75/M	<1/N	<1/N			M	L							
Goodale's Cutoff Study Trail [1]	H	M	H	H	19/N	81/H	1/L	3/N	1/N	3/N			H	M							
Grande Tour Route	None	L	None	L	None	25/L	None	35/L	None	44/M			None	N							
Hells Canyon All American Road	H	H	H	H	16/N	84/H	25/L	75/M	23/L	54/M			H	M							
I-84	H	L	L	L	20/N	80/M	27/L	72/M	18/N	48/M			L	N							
Manning Creek Road	H	M	H	M	20/N	80/M	60/M	40/M	33/L	2/N			M	L							
Oregon National Historic Trail [1]	H	M	H	M	26/L	74/M	24/L	76/M	19/N	61/L			H	M							
Powder River Wild and Scenic River Corridor/ Thief Valley Reservoir Road	None	M	None	M	None	13/N	None	45/M	None	77/M			None	L							
Snake River-Mormon Basin Back Country Byway	H	M	H	H	16/N	84/H	21/L	79/M	19/N	63/M			H	H							
SR-203	H	M	H	H	12/N	88/H	16/N	84/H	13/N	66/M			L	N							
Special Management Areas																					
Oregon Trail ACEC	H	L	M	M							8/N	56/M	M	L							
Powder River ACEC	None	M	None	M							None	58/M	None	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail and Goodale's Cutoff Study Trail occur in Oregon and Idaho.

SEGMENT 4—BROGAN AREA SEGMENT

Summary of Direct Impacts—Willow Creek Alternative

The following information provides a succinct summary of potential impacts for the Willow Creek Alternative. The information is organized based on the general headings provided in **Error! Reference source not found.**.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing rolling sage steppe and flat agricultural valley within this landscape would experience a high magnitude of change in scenic quality within the foreground of the Willow Creek Alternative alignment in the Blue and Wallowa Foothills (BA-014), Hope Butte (MA-038), Treasure Valley (MA-039), and Moores Hollow (MA-040) VAUs and a moderate change in the Gum Creek (MA-012) VAU. The magnitude of change in the remaining nine VAUs would range from negligible to none.

Middleground: Based on the increased viewing distance, the scale of the project components within the middleground would be visually subordinate to the characteristics of the existing landscape, and impacts would be predominantly low.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high due to the dominant scale of the transmission line towers in comparison to the landforms, vegetation, and built features found in the existing landscape alignment in the Blue Wallowa Foothills (BA-014), Hope Butte (MA-038), Treasure Valley (MA-039), and Moores Hollow (MA-040 VAUs. The magnitude of change in the remaining ten VAUs would range from negligible to none.

Stationary Viewing Platforms

Foreground: There would be no impacts to people from seven of the eight stationary platforms associated with the Willow Creek Alternative because the project components would not be visible from these locations in the foreground. The project components would be visible from the remaining stationary platform (5-13 Farewell Bend State Recreation Area – Oregon Trail Blvd), however people's views at this location would be negligibly impacted.

Middleground: Perceived impacts from five of the eight stationary platforms in the middleground associated with visibility would range from low to high, with the highest degree of visibility associated with Huntington Community (5-5) and Steck Park BLM Recreation Site (7-6) from which the project components would be predominantly skylined. The angle of view impacts from three platforms in the middle-round would range from low to high, with the high degree of impact from the Community of Jamieson (8-8). The amount of project components seen from the stationary platforms in the middleground would be negligible to moderate, with less than 50 percent of the project components visible. The scale-related impacts of the project components would be negligible to low in the middleground, meaning that the project would not be visually evident, or would be visually subordinate to the existing landscape.

Linear Viewing Platforms

Foreground: People traveling along two of the five of the linear platforms associated with the Willow Creek Alternative would see evidence of the project components. Impacts to people's views in the foreground from I-84 and U.S. Highway 26 would range from negligible to high, with the high impact relating to the angle of view from U.S. Highway 26.

Middleground: The visibility condition for people in the middleground would vary from low to high, including just one high degree of impact (associated with the Snake River-Mormon Basin Backcountry Byway). The angle of view from the five linear platforms in the middleground would range from low to high. The high angle of view impact would be associated with the Snake River-Mormon Basin Backcountry Byway. Impacts associated with the amount of project components visible from the linear platforms in the middleground vary from low to high. People would see a high percentage of project components from three of the linear platforms in the middleground, including Goodale's Cutoff Study Trail, Oregon National Historic Trail, and U.S. Highway 26. People would experience negligible to high impacts to views of project components. In addition, the project components would be visible for 81-100 percent of the time for those travelling along Goodale's Cutoff Study Trail, I-84, Oregon National Historic Trail, and U.S. Highway 26. The impacts associated with duration of impact within the middleground would range from negligible to moderate, with all durations being less that 80 percent of the overall duration of travel in the analysis area. People would perceive negligible to low degrees of impact in the middleground with respect to scale because the project components would either not be evident or would be visually subordinate to the existing landscape.

Special Management Areas

There would be two SMAs, Oregon Trail – Birch Creek and Oregon Trail – Tub Mountain ACECs that would have views of the Willow Creek Alternative in the middleground; the project components would not be seen in the foreground of the SMAs. The potential impacts would be similar and range from moderate level of impact in terms of the angle of view. For Oregon Trail – Tub Mountain ACEC there would also be moderate level of impact because of the amount of project components that would be seen. The level of contrast seen from the middleground from either ACEC of this alternative would be negligible.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Willow Creek Alternative

The following information provides a succinct summary of potential impacts for the equivalent section of the Proposed Action to the Willow Creek Alternative. The information is organized based on the general headings provided in **Error! Reference source not found.**.

Scenic Quality

Foreground: Based on the highly variable, rolling landforms that the Proposed Action would cross, the large scale of the transmission line towers would predominantly result in a high magnitude of change in the Blue and Wallowa Mountains (BA-014) and Treasure Valley (MA-039) VAUs and a moderate magnitude of change in scenic quality within the foreground distance zone of Caribou Bar (BA-027), Becker Creek (MA-009), Crow Creek (MA-011), Gum Creek (MA-012), Juniper Valley (MA-015), Hope Butte (MA-038), and Moores Hollow(MA-040) VAUs.

Middleground: Within the middleground, views of the Proposed Action would be limited by the rolling landforms, and would result in a predominantly low magnitude of change.

Landscape Character

The magnitude of change in landscape character associated with the Proposed Action would be high in the Blue and Wallowa Mountains (BA-014) and Treasure Valley (MA-039) VAUs and moderate in the Becker Creek (MA-009), Crow Creek (MA-011), Gum Creek (MA-012), Juniper Valley (MA-015), Hope Butte (MA-038), and Moores Hollow(MA-040) VAUs because the footprint of the project components would dominate or begin to dominate the visual setting of the existing rolling sage-steppe landscape.

Stationary Viewing Platforms

Foreground: None of the three stationary platforms would have views of the Proposed Action project components in the foreground.

Middleground: The Proposed Action would be visible from the all three stationary platforms associated with the Proposed Action. Perceived impacts from these platforms would range from negligible to high. Peoples' views would be highly impacted by visibility conditions and angles of views, including predominantly skylined project components from Huntington Community (5-5) and Steck Park BLM Recreation Site (7-6) platforms, and a high angle of exposure or a view of the project components from the Community of Brogan (8-8).

Linear Viewing Platforms

Foreground: People traveling along all four of the linear platforms associated with the Proposed Action would see evidence of the project components within the foreground and middleground of the platforms. People along I-84 and U.S. Highway 26 would experience predominantly head-on views of the project components.

Middleground: High impacts associated with visibility conditions occur along the Snake River-Mormon Basin Backcountry Byway, indicating that people's views of the project components would be predominantly skylined from this linear platform in the middleground. The amount of project components visible from I-84, Oregon National Historic Trail, and U.S. Highway 26 would be high, with more than 85 percent of the project components being visible for people travelling along the platform and 81-100 percent of the platforms having views of project components within the analysis area.

Special Management Areas

There are no special management areas impacted by this portion of the Proposed Action.

Comparison of Willow Creek Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Willow Creek Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Willow Creek Alternative would have 2.9 times more highly impacted acres than the equivalent section of the Proposed Action. The Proposed Action would have more than 50,000 moderately impacted acres, as compared to 36 moderately impacted acres for the Willow Creek Alternative.

Landscape Character

The Willow Creek Alternative would have 2.9 times the amount of highly impacted acreage than the equivalent section of the Proposed Action. The Proposed Action would have more than 600 moderately impacted acres, as compared to no moderately impacted acres for the Willow Creek Alternative.

Stationary Viewing Platforms

The Willow Creek Alternative would have no high impacts with regard to viewers at the stationary platforms. The Proposed Action would have high impacts with regard to visibility conditions and angles of view. The Willow Creek Alternative would have more moderate impacts with regard to angles of view and magnitude of project components visible while the Proposed Action would have more moderate impacts with regard to visibility conditions.

Linear Viewing Platforms

The Willow Creek Alternative would have more high impacts with regard to magnitude of platform affected and magnitude of duration of view than the Proposed Action. The Proposed Action would have more high impacts with regard to visibility conditions, angles of view, magnitude of project components visible, and magnitude of platform affected. The Willow Creek Alternative would have more moderate impacts with regard to visibility conditions, angles of observation, and duration of view than the Proposed Action, which would have more moderate impacts with regard to duration of view and perceived scale.

Special Management Areas

The Willow Creek Alternative would have direct impacts to the views from the Oregon Trail – Birch Creek and Oregon Trail – Tub Mountain ACECs. The Proposed Action would have no impacts to these two ACECs.

Summary of Direct Impacts—Tub Mountain South Alternative

The following information provides a succinct summary of potential impacts for the Tub Mountain South Alternative. The information is organized based on the general headings provided in **Error! Reference source not found.**.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality within the foreground of the Tub Mountain South alignment the. Blue and Wallowa Foothills (BA-014), Caribou Bar (BA-027), Gum Creek (MA-012), Hope Butte (MA-038), Treasure Valley (MA-039), Moores Hollow (MA-040), and Alkali Flats (MA-120) VAUs. The remaining eight VAUs would experience a negligible to none change in scenic quality.

Middleground: Within the middleground, views of the project components would be limited by the increased distance and by the variable rolling landforms, resulting in a low magnitude of impact.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high due to the dominant scale of the transmission line towers in the rolling sage steppe and flat agricultural valley landscapes in the same seven VAUs noted to have a high magnitude of change in scenic quality. The remaining eight VAUs would experience a negligible to none change in landscape character.

Stationary Viewing Platforms

Foreground: There would be no impacts to people in the foreground from 9 of the 11 stationary platforms associated with the Tub Mountain South Alternative because the project components would not be visible from these locations. Potential impacts to views from the Farewell Bend State Recreation Area – Oregon Trail Blvd (5-13) would be negligible from the project components. People's views from Oregon Trail ACEC Birch Creek (8-3) would include predominantly skylined project components in the foreground, resulting in a high impact to visibility conditions.

Middleground: Although impacts in the middleground to the seven affected stationary platforms would range from negligible to high, the predominant level of impact would be low to negligible. People would experience the highest impacts to their views in the middleground associated with 8-5 Bully Creek Reservoir (8-5) and Farewell Bend State Recreation Area - Oregon Trail Blvd (5-13). Views from the Bully Creek Reservoir (8-5) would be substantially impacted because of the high degree of exposure. Views from the Farewell Bend State Recreation Area - Oregon Trail Blvd (5-13) would be highly impacted because more than 80 percent of the project components would be visible from this viewpoint.

Linear Viewing Platforms

Foreground: People traveling along two of the five linear KOPs associated with the Tub Mountain South Alternative would not see any evidence of the project components within the foreground of the platforms. Impacts to the three linear platforms affected (I-84, Oregon National Historic Trail, and U.S. Highway 26) within the foreground would range from negligible to high, but each of these platforms would be highly impacted by predominantly skylined project components. The people traveling along the Oregon National Historic Trail would additionally experience high impacts in the foreground associated with the visually dominant scale of the project.

Middleground: The Tub Mountain South Alternative would be visible in the middleground from all five of the linear platforms, with impacts ranging from negligible to high. With respect to visibility conditions in the middleground, high impacts associated with predominantly skylined project components would affect people's views along both Goodale's Cutoff Study Trail and the Snake River-Mormon Basin Backcountry Byway. People would also experience high impacts associated with predominantly head-on views of the project components from I-84, the Oregon National Historic Trail, and U.S. Highway 26. The amount of the project that people would see from Goodale's Cutoff Study Trail, the Oregon National Historic Trail, and U.S. Highway 26 would also be highly impacted, with more than 84 percent of project components being visible from the platforms and more than 82 percent of the platforms having views of project components.

Special Management Areas

The Oregon Trail – Birch Creek and Oregon Trail –Tub Mountain ACECs would include views of the project components, with impacts ranging from low to high. Views of the project would highly affect people at both SMAs with regard to the amount of project components that would be visible (81-85 percent). People's views from portions of the Oregon Trail ACEC - Birch Creek would include predominantly skylined views of the project components in the middleground, resulting in a high impact to this SMA. The scale of the project would also be visually dominant from this ACEC in the middleground, and people's views would be high in terms of the perceived scale of the project.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Tub Mountain South Alternative

The following information provides a succinct summary of potential impacts to compare the Tub Mountain South Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in **Error! Reference source not found.**.

Scenic Quality

Foreground: Based on the highly variable, rolling landforms that the Proposed Action would cross, the large scale of the transmission line towers would predominantly result in a moderate magnitude of change in scenic quality within the foreground distance zone. The Proposed Action would create a high magnitude of change in scenic quality in the Blue and Wallowa Foothills (BA-014) and Treasure Valley (MA-039) VAUs because of the dominance of the project components.

Middleground: Within the middleground, views of the project components would be limited by the rolling landforms, and would result in a predominantly low magnitude of change.

Landscape Character

The magnitude of change in landscape character associated with the project components would be predominantly moderate with a high magnitude of change in the Blue and Wallowa Foothills (BA-014) and Treasure Valley (MA-039) VAUs because the footprint of the project components would attract attention and begin to dominate the visual setting of the existing rolling sage-steppe landscape or dominate in the case of the high magnitude of change in landscape character.

Stationary Viewing Platforms

Foreground: There would not be impacts to people's views in the foreground from the four stationary platforms associated with the Proposed Action because the project components would not be visible from these locations.

Middleground: People's views in the middleground from three of the four stationary platforms would range from negligible to high, with high magnitudes of impact occurring from Steck Park BLM Recreation Site(7-6) and Community of Brogan (8-6). From Steck Park BLM Recreation Site, people would see the project components as predominantly skylined, which is associated with a high degree of impact from visibility conditions. Views from residents in the community of Brogan would experience a high impact associated with view exposure in excess of 225 degrees.

Linear Viewing Platforms

Foreground: People traveling along two of the five linear platforms associated with the section of the Proposed Action equivalent to the Tub Mountain South Alternative would not see any evidence of the project components within the foreground of the platforms. Motorists along I-84 and U.S. Highway 26 would have views of the project components in the foreground. Impacts perceived from these platforms would range from negligible to high in the foreground. People's views in the foreground from I-84 would be of predominantly skylined project components, resulting in high impacts with regard to visibility conditions. People's views of the project components in the foreground from both I-84 and U.S. Highway 26 would be predominantly head-on, resulting in a high degree of impacts associated with the angle of view from these platforms.

Middleground: In the middleground, peoples' views from the Oregon National Historic Trail and the Snake River-Mormon Basin Backcountry Byway would be of predominantly skylined project components, resulting in high impacts with regard to visibility conditions. Predominantly head-on views of project components would occur along I-84, resulting in high impacts associated with people's angle of observation. The amount of the project that people would see in the middleground from I-84, the Oregon National Historic Trail, and U.S. Highway 26 would also be highly impacted, with more than 85 percent of project components being visible from the platforms and more than 80 percent of the platforms having views of project components.

Special Management Areas

There are no special management areas impacted by this portion of the Proposed Action.

Comparison of Tub Mountain South Alternative to Equivalent Section of the Proposed Action

The following information provides a succinct summary of potential impacts to compare the Tub Mountain South Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in 3.32.

Scenic Quality

The Tub Mountain South Alternative would have nearly 14 times more highly impacted acres than the Proposed Action. The Proposed Action would have more than 53,000 moderately impacted acres, as compared to no moderately impacted acres for the Tub Mountain South Alternative.

Landscape Character

The Tub Mountain South Alternative would have more than 4 times the amount of highly impacted acreage than the equivalent section of the Proposed Action. The Proposed Action would have more than 900 moderately impacted acres, as compared to no moderately impacted acres for the Tub Mountain South Alternative.

Stationary Viewing Platforms

The Tub Mountain South Alternative would have more high impacts than the Proposed Action with regard to visibility conditions and magnitude of project components visible. The Proposed Action would have more high impacts with regard to angles of view. In addition, the Tub Mountain South Alternative would have more moderate impacts with regard to visibility conditions, and angles of view than the Proposed Action, which would have more moderate impacts with regard to magnitude of project components visible.

Linear Viewing Platforms

The Tub Mountain South Alternative would have more high impacts than the equivalent section of the Proposed Action with regard to all of the factors of viewer sensitivity, including visibility conditions, angles of view, magnitude of project components visible, duration of view, and perceived scale.

The Tub Mountain South Alternative would have more moderate impacts than the Proposed Action with regard to visibility condition, magnitude of project components visible, duration of view and perceived scale. The Proposed Action would have more moderate impacts with regard to angles of view than the Tub Mountain South Alternative.

Special Management Areas

Tub Mountain South Alternative would have greater impacts than the Proposed Action with regard views from the Oregon Trail – Birch Creek and Oregon Trail- Tub Mountain because there would be no views of the Proposed Action from these two ACECs.

1 **Table 3-166. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Willow Creek Alternative**

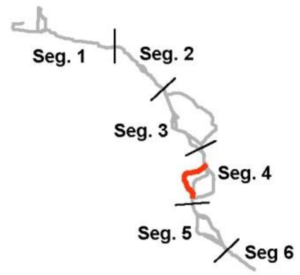
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality						Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															45/M	B	C	H	B	L	H
BA-025 Juniper and Sugarloaf Mountains															46/M	B	NC	None	B	L	None
BA-027 Caribou Bar															50/M	C	NC	N	C	L	None
BA-028 Brownlee Reservoir															19/N	B	NC	N	NC	N	N
BA-031 Phipps Creek															None	C	NC	None	NC	None	None
FR-025 Juniper and Sugarloaf Mountains															16/N	N/A	NC	None	N/A	N	None
FR-028 Brownlee Reservoir															33/L	N/A	NC	N	N/A	N	None
MA-009 Becker Creek															32/L	C	NC	None	NC	N	None
MA-012 Gum Creek															32/L	C	C	M	C	L	None
MA-015 Juniper Mountain															26/L	B	NC	None	B	L	None
MA-038 Hope Butte															58/M	C	C	H	C	L	H
MA-039 Treasure Valley															78/M	B	B	H	B	L	H
MA-040 Moores Hollow															65/M	C	C	H	C	L	H
MA-119 Danger Point															6/N	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
5-5 Huntington Community	None	H	None	N							None	2/N	None	N							
5-13 Farewell Bend State Recreation Area – Oregon Trail Blvd	N	None	N	None							N	None	N	None							
7-1 Weiser Dunes OHV Area [1]	None	L	None	L							None	22/L	None	N							
7-6 Steck Park BLM Recreation Site [1]	None	H	None	M							None	4/N	None	N							
8-24 Oregon Trail ACEC – Tub Mountain	None	None	None	None							None	None	None	None							
8-3 Oregon Trail ACEC Birch Creek	None	None	None	None							None	None	None	None							
8-6 Brogan Community	None	L	None	N							None	2/N	None	N							
8-8 Jamieson Community	None	L	None	H							None	50/M	None	L							
Linear Viewing Platforms																					
Goodale's Cutoff Study Trail [1]	None	L	None	M	None	100/H	None	100/H	None	27/L			None	N							
I-84	L	L	M	M	37/L	21/L	19/N	81/H	7/N	43/M			L	L							
Oregon National Historic Trail [1]	None	M	None	L	None	99/H	None	100/H	None	66/M			None	N							

	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Snake River-Mormon Basin Back Country Byway	None	H	None	H	None	31/L	None	10/N	None	11/N			None	L							
US-26	M	L	H	L	9/N	91/H	11/N	89/H	None	27/L			M	L							
Special Management Areas																					
Oregon Trail - Birch Creek ACEC	None	L	None	M							None	13/N	None	N							
Oregon Trail - Tub Mountain ACEC	None	L	None	M							None	56/M	None	N							

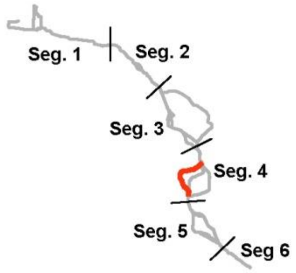
Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] Viewing platform occurs in Idaho.

1 **Table 3-167. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Section of the Proposed Action**
2 **Equivalent to the Willow Creek Alternative**



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															66/M	B	C	H	B	M	H
BA-025 Juniper and Sugarloaf Mountains															40/M	B	NC	None	B	L	None
BA-027 Caribou Bar															48/M	C	C	M	C	L	None
BA-028 Brownlee Reservoir															7/N	B	NC	None	B	L	None
BA-031 Phipps Creek															43/M	C	NC	N	C	L	None
FR-025 Juniper and Sugarloaf Mountains															39/L	N/A	NC	None	N/A	L	None
FR-028 Brownlee Reservoir															10/N	N/A	NC	None	N/A	L	None
MA-007 Cow Valley Butte															5/N	B	NC	None	NC	N	None
MA-009 Becker Creek															64/M	C	C	M	C	L	M
MA-011 Crow Creek															45/M	B	B	M	NC	N	M
MA-012 Gum Creek															55/M	C	C	M	C	L	M
MA-013 Thorn Flat															5/N	C	NC	None	NC	N	None
MA-015 Juniper Mountain															26/L	B	B	M	NC	N	None
MA-016 Cow Valley															None	C	NC	None	NC	None	None
MA-035 Little Poison															None	B	NC	None	NC	None	None
MA-036 Swede Flat															None	B	NC	None	NC	None	None
MA-038 Hope Butte															68/M	C	C	M	C	L	M
MA-039 Treasure Valley															84/H	B	B	H	B	L	H
MA-040 Moores Hollow															40/L	C	C	M	NC	N	M
MA-119 Danger Point															None	B	NC	None	NC	None	None

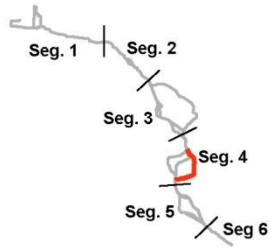


	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Stationary Viewing Platforms																					
5-5 Huntington Community	None	H	None	N							None	7/N	None	N							
7-6 Steck Park BLM Recreation Site [1]	None	H	None	N							None	13/N	None	N							
8-6 Brogan Community	None	M	None	H							None	9/N	None	L							
Linear Viewing Platforms																					
I-84	L	L	H	H	3/N	100/H	2/N	100/H	2/N	38/L			L	L							
Oregon National Historic Trail [1]	None	L	None	L	None	100/H	None	100/H	None	38/L			None	N							
Snake River-Mormon Basin Back Country Byway	None	H	None	M	None	22/L	None	28/L	None	31/L			None	L							
US-26	M	L	H	L	15/N	85/H	19/N	81/H	14/N	62/M			M	N							

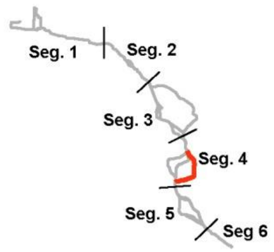
Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] Viewing platform occurs in Idaho. In addition, the Oregon National Historic Trail occurs in Oregon and Idaho.

Table 3-168. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Tub Mountain South Alternative



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															41/M	B	C	H	B	L	H
BA-025 Juniper and Sugarloaf Mountains															33/L	B	NC	None	B	L	None
BA-027 Caribou Bar															59/M	C	C	H	C	L	H
BA-028 Brownlee Reservoir															27/L	B	NC	N	B	L	N
FR-025 Juniper and Sugarloaf Mountains															39/L	N/A	NC	None	N/A	L	None
FR-028 Brownlee Reservoir															51/M	N/A	NC	N	N/A	L	None
MA-012 Gum Creek															58/M	C	C	H	C	L	H
MA-015 Juniper Mountain															36/L	B	NC	None	NC	N	None
MA-036 Swede Flat															0/None	B	NC	None	NC	None	None
MA-038 Hope Butte															57/M	C	C	H	C	L	H
MA-039 Treasure Valley															76/M	B	B	H	B	L	H
MA-040 Moores Hollow															51/M	C	C	H	C	L	H
MA-119 Danger Point															44/M	B	NC	None	B	L	None
MA-120 Alkali Flats															98/H	C	C	H	C	L	H
Stationary Viewing Platforms																					
5-5 Huntington Community	None	M	None	N							None	14/N	None	N							
5-13 Farewell Bend State Recreation Area – Oregon Trail Blvd	N	None	N	None							100/H	None	N	None							
7-1 Weiser Dunes OHV Area [1]	None	L	None	L							None	L	None	N							
7-6 Steck Park BLM Recreation Site [1]	None	None	None	None							None	None	None	None							
8-1 Alkali Springs Interpretive Site	None	M	None	L							None	28/L	None	L							
8-5 Bully Creek Reservoir	None	M	None	H							None	28/L	None	L							
8-24 Oregon Trail ACEC – Tub Mountain	None	None	None	None							None	None	None	None							
8-3 Oregon Trail ACEC -Birch Creek	H	L	N	M							5/N	20/L	L	L							
8-34 South Alkali Sand Hills ACEC	None	L	None	N							None	13/N	None	N							
8-99 Tub Mountain Reservoir Enclosure	None	None	None	None							None	None	None	None							
8-103 Tub Springs Interpretive Site	None	L	None	L							None	N	None	N							

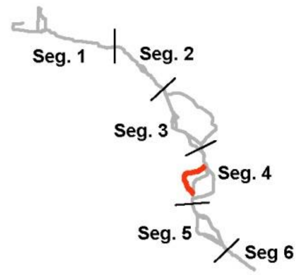


	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Linear Viewing Platforms																					
Goodale's Cutoff Study Trail [1]	None	H	None	L	None	100/H	None	100/H	None	6/N			None	M							
I-84	H	L	L	H	64/M	39/L	59/M	41/M	33/L	24/L			M	L							
Oregon National Historic Trail [1]	H	M	H	H	16/N	84/H	18/N	82/H	14/N	61/M			H	L							
Snake River-Mormon Basin Back Country Byway	None	H	None	M	None	24/L	None	27/L	None	27/L			None	L							
US-26	H	M	H	H	16/N	84/H	13/N	87/H	7/N	71/M			M	L							
Special Management Areas																					
Oregon Trail - Birch Creek	None	H	None	M							14/N	71/M	None	H							
Oregon Trail - Tub Mountain ACEC	None	L	None	M							None	81/H	None	M							

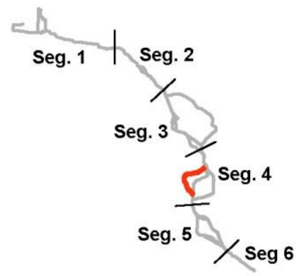
Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail and Goodale's Cutoff Study Trail occur in Oregon and Idaho.

Table 3-169. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Section of the Proposed Action Equivalent to the Tub Mountain South Alternative



	Sensitive Viewing Platforms															Scenic Quality					
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
BA-014 Blue and Wallowa Foothills															68/M	B	C	H	C	M	H
BA-025 Juniper and Sugarloaf Mountains															33/L	B	NC	None	B	L	None
BA-027 Caribou Bar															65/M	C	C	M	C	L	M
BA-028 Brownlee Reservoir															6/N	B	NC	None	NC	N	None
BA-031 Phipps Creek															43/M	C	NC	N	C	L	None
FR-025 Juniper and Sugarloaf Mountains															14/N	N/A	NC	None	N/A	L	None
FR-028 Brownlee Reservoir															11/N	N/A	NC	None	N/A	L	None
MA-007 Cow Valley Butte															5/N	B	NC	None	NC	N	None
MA-009 Becker Creek															64/M	C	C	M	C	L	M
MA-011 Crow Creek															45/M	B	B	M	NC	N	M
MA-012 Gum Creek															69/M	C	C	M	C	L	M
MA-013 Thorn Flat															5/N	C	NC	None	NC	N	None
MA-015 Juniper Mountain															34/L	B	B	M	NC	N	None
MA-016 Cow Valley															None	C	NC	None	NC	None	None
MA-035 Little Poison															None	B	NC	None	NC	None	None
MA-036 Swede Flat															None	B	NC	None	NC	None	None
MA-038 Hope Butte															73/M	C	C	M	C	L	M
MA-039 Treasure Valley															83/H	B	B	H	B	L	H
MA-040 Moores Hollow															41/M	C	C	M	NC	N	M
MA-041 Sourdough Basin															None	C	NC	None	NC	None	None
MA-119 Danger Point															26/L	B	NC	None	B	L	None



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Stationary Viewing Platforms																					
5-5 Huntington Community	None	M	None	L							None	58/M	None	N							
7-6 Steck Park BLM Recreation Site [1]	None	H	None	N							None	6/N	None	N							
8-5 Bully Creek Reservoir	None	None	None	None							None	None	None	None							
8-6 Brogan Community	None	M	None	H							None	9/N	None	L							
Linear Viewing Platforms																					
I-84	H	M	H	H	14/N	86/H	20/N	80/H	9/N	48/M			L	L							
Meek Cutoff Study Trail	None	None	None	None	None	None	None	None	None	None			None	None							
Oregon National Historic Trail [1]	None	H	None	L	None	94/H	None	100/H	None	58/M			None	L							
Snake River-Mormon Basin Back Country Byway	None	H	None	M	None	36/L	None	31/L	None	33/L			None	L							
US-26	M	L	H	L	15/N	85/H	19/N	81/H	14/N	62/M			M	N							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] Viewing platform occurs in Idaho. In addition, the Oregon National Historic Trail occurs in Oregon and Idaho.

Segment 5—Malheur Segment

Summary of Direct Impacts—Double Mountain Alternative

The following information provides a succinct summary of potential impacts for the Double Mountain Alternative. The information is organized based on the general headings provided in Table 3-170.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality in the Sourdough Basin (MA-041) VAU within the foreground of the Double Mountain Alternative alignment in this rolling sage steppe landscape.

Middleground: Within the middleground, views of the project components would be limited by increased distance from the project components, and the magnitude of change would be negligible.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high in the Sourdough Basin (MA-041) VAU due to the dominant scale of the transmission line towers in comparison to the rolling landforms, low sage steppe, and limited amount of built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There are three stationary platforms related to the Double Mountain Alternative alignment; two of the three would have views of the project components with degrees of impact ranging from negligible to high in the foreground of the platforms. Both Broken Rim Wilderness Characteristics Inventory Unit - Hoo Doo Road North (8-88) and Double Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road (8-33) would be subject to high impacts. These impacts would be related to angles of view in the foreground where people would be exposed to views of the project that exceed 225 degrees.

Middleground: Within the middleground, the three stationary platforms would have views of the project components with degrees of impact ranging from negligible to moderate. The Proposed Action would create a moderate level of contrast when viewed from the two platforms related to the Double Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road (8-33) and Rock Canyon Road (8-90).

Linear Viewing Platforms

Foreground and Middleground: There would be no impacts to people's views from the one linear platform, U.S. Highway 20, associated with the Double Mountain Alternative because the project components would not be visible from this platform in either the foreground or middleground.

Special Management Areas

There are no special management areas impacted by this alternative.

Summary of Direct Impacts—Section of Proposed Action Equivalent to Double Mountain Alternative

The following information provides a succinct summary of potential impacts to compare the Double Mountain Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-171.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality in the Sourdough Basin (MA-041) VAU within the foreground of the Proposed Action in this rolling sage steppe landscape.

Middleground: Within the middleground, views of the project components would be limited by increased distance from the project components, and the magnitude of change would be predominantly low.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high in the Sourdough Basin (MA-041) VAU due to the dominant scale of the transmission line towers in comparison to the rolling landforms, low sage steppe, and limited amount of built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There are three stationary platforms related to the Proposed Action; one of which would have views of the project with degrees of impact ranging from negligible to high. Double Mountain Wilderness Characteristics Inventory Unit - Twin Spring Rd North (8-33) would be subject to high impacts. These impacts would be related to angles of view in the foreground where people would be exposed to views of the project that exceed 225 degrees. There would be no impacts to views from the remaining two stationary platforms.

Middleground: The impacts to views from the three stationary platforms would be predominately low. This section of the Proposed Action would be prominent and create moderate contrast when viewed from the Double Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road (8-33) and Rock Canyon Road (8-90).

Linear Viewing Platforms

Foreground: There would be no impacts to people's views from the one linear platform, U.S. Highway 20, associated with this section of the Proposed Action because the project components would not be visible from this platform in the foreground.

Middleground: Impacts to people's views from one linear platform (U.S. Highway 20) associated with the Proposed Action would vary from negligible to high. Travelers along the U.S. Highway 20 would experience a high degree of impact in the middleground because they would have views of the project components for 100 percent of the total time travelled along the platform within this alignment's analysis area.

Special Management Areas

There are no special management areas impacted by this portion of the Proposed Action.

Comparison of Double Mountain Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Double Mountain Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Double Mountain Alternative would have 34% more highly impacted acres than the equivalent section of the Proposed Action. The Proposed Action would have more than 5,600 moderately impacted acres, as compared to no moderately impacted acres for the Double Mountain Alternative.

Landscape Character

The Double Mountain Alternative would have 6.5% more highly impacted acreage than the Proposed Action. Neither alignment would have moderate impacts to landscape character.

Stationary Viewing Platforms

The Double Mountain Alternative would have more high impacts than the equivalent section of the Proposed Action with regard to visibility conditions. In addition, the Double Mountain Alternative would have more moderate impacts with regard to angles of observation and perceived scale than the Proposed Action.

Linear Viewing Platforms

The Double Mountain Alternative would have no high impacts with regard to viewers at the linear platforms. In comparison, the Proposed Action would have high impacts with regard to magnitude of platform affected and magnitude of duration of view and moderate impacts with regard to angles of observation.

Special Management Areas

There are no special management areas impacted by either Double Mountain Alternatives or the Proposed Action.

Summary of Direct Impacts—Malheur S Alternative

The following information provides a succinct summary of potential impacts for the Malheur S Alternative. The information is organized based on the general headings provided in Table 3-172.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience a high magnitude of change in scenic quality within the foreground of the Malheur S Alternative alignment in the Sourdough Basin (MA-041), Hoodoo Ridge (MA-058), Board Canal (MA-

074), Antelope Springs (MA-077), and Owyhee River (MA-122) VAUs and moderate change in the Owyhee Tunnel (MA-060) VAU. The magnitude of change in the remaining nine VAUs would range from negligible to none.

Middleground: Within the middleground, views of the project components would be limited by steeply rolling landforms in some areas. Impacts to scenic quality from within the middleground of the alignment would range from negligible to moderate, but would be predominantly low.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high in the Sourdough Basin (MA-041), Hoodoo Ridge (MA-058), Board Coral (MA-074), Antelope Springs (MA-077), and Owyhee River (MA-122) VAUs and moderate in the Owyhee Tunnel (MA-060) VAU due to the degree that the transmission line towers would dominate the scale of the in comparison to the steeply rolling landforms, low sage steppe vegetation, and limited amount of built features found in the existing landscape. The magnitude of change in the remaining nine VAUs would range from negligible to none.

Stationary Viewing Platforms

Foreground: There would be no impacts to people's view from 12 of the 17 stationary platforms associated with the Malheur S Alternative because the project components would not be visible from these locations. The five affected platforms would include views of the project within the foreground, with impacts ranging from negligible to high. Project components would be predominantly skylined in the foreground, resulting in a high degree of impact with respect to visibility conditions, occupy over 180 degrees of the views, and dominate the setting from people's views from Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek South (8-94) creating high contrast.

Middleground: Impacts in the middleground of the 12of the 17 stationary platforms would range from negligible to high. People's views from the Board Corral Mountain Wilderness Characteristics Inventory Unit (8-4) would be predominantly skylined in the middleground, resulting in a high degree of impact with respect to visibility conditions. High impacts would also occur at McIntyre Ridge Wilderness Characteristics Inventory Unit- Succor Creek Road (8-74), Double Mountain Wilderness Characteristics Inventory Unit Twin Springs Road (8-91) and Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek South (8-94)in the middleground due to angles of observation that would exceed 225 degrees. One stationary platform, Sourdough Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (8-85) would experience high impacts associated with the scale of the project components in the middleground because these components would visually dominate people's views from this platform and create high contrast in the setting.

Linear Viewing Platforms

Foreground: Impacts to people's views that are travelling along linear platforms associated with the Malheur S Alternative would vary from negligible to high. Of the five linear platforms associated with this alternative, two (Owyhee Canyon River Entry Road and U.S. Highway 20) would have views of the project components in the foreground. People's views of the project components would be predominantly skylined and head-on in the foreground of these to linear platforms resulting in high impacts to visibility conditions.

Middleground: People traveling along three of the five linear platforms associated with the Malheur S Alternative would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for two of the linear platforms (Owyhee Canyon River Entry Road and U.S. Highway 20). The amount of the project that people would see in the middleground would be high from Meek Cutoff Study Trail, Mitchell Butte Road, and the Oregon National Historic Trail. People travelling along these three platforms would experience views of 96-100 percent of the surrounding project in addition to seeing project components along 100 percent of the platforms.

Special Management Areas

Four SMAs (Owyhee Below the Dam and Owyhee Views ACECs, the VRM Class I surrounding Owyhee Lake and Wild Horse Basin Wilderness Characteristics Inventory Unit) would include views of the project components, with impacts ranging from negligible to high in either the foreground or middleground. People's views from portions of the Owyhee Below the Dam ACEC would include predominantly skylined views of the project components, resulting in a high degree of impact to this ACEC in the foreground and middleground. There would be no views of Malheur S Alternative in the foreground from Owyhee Views ACEC, the VRM Class I surrounding Owyhee Lake, or Wild Horse Basin Wilderness Characteristics Inventory Unit.

Summary of Direct Impacts—Malheur A Alternative

The following information provides a succinct summary of potential impacts for the Malheur A Alternative. The information is organized based on the general headings provided in Table 3-173.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers, the existing landscape would experience areas of high magnitude of change in scenic quality in the Sourdough Basin (MA-041), Hoodoo Ridge (MA-058), Board Coral (MA-074), and North Alkali (MA-075) VAUs and moderate in the Owyhee River (MA-122) Owyhee Tunnel (MA-060) VAUs within foreground of the Malheur A Alternative alignment. The magnitude of change in the remaining ten VAUs would range from negligible to none.

Middleground: Within the middleground, views of the project components would be limited by steeply rolling landforms some areas. Impacts to scenic quality from within the middleground of the alignment would range from negligible to none except in the Owyhee River (MA-122) VAU where the magnitude of change in scenic quality would be moderate.

Landscape Character

The magnitude of change in landscape character associated with the project components would be moderate to high in the same VAUs as noted in the magnitude of change in scenic quality. This change in landscape character would be due to the dominant scale of the transmission line towers in comparison to the steeply rolling landforms, low sage steppe vegetation, and limited amount of built features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There would be no impacts on views from 10 of the 16 stationary KOPs associated with the Malheur A Alternative because the project components would not be visible from these locations. The six affected platforms would include views of the project within the foreground, with impacts ranging from negligible to high. People's views Board Corral Mountain Wilderness Characteristics Inventory Unit (8-4) and Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek South (8-94) would be predominantly skylined in the foreground, resulting in a high degree of impact with respect to visibility conditions. High impacts would also occur at Burnt Mountain Wilderness Characteristics Inventory Unit (8-84), Double Mountain Wilderness Characteristics Inventory Unit-Negro Rock Creek South (8-94), and Lower Owyhee River Site H2 (8-95) in the foreground due views of the project within the primary focus of viewers within Owyhee Canyon. Four stationary platforms (Burnt Mountain Wilderness Characteristics Inventory Unit [8-84], Sourdough Mountain Wilderness Characteristics Inventory Unit – Twin Springs Road [8-85], Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek South [8-94)], and Lower Owyhee River Site H2 [8-95]) would experience high impacts associated with the scale of the Malheur A Alternative because the project components would visually dominate people's views from these platforms.

Middleground: Impacts in the middleground of the 14 of the 16 stationary platforms would range from negligible to high. People's views from Lake Owyhee State Park (8-18) would be predominantly skylined in the middleground, resulting in a high degree of impact with respect to visibility conditions. High impacts would also occur at in the middleground from McIntyre Ridge Wilderness Characteristics Inventory Unit (8-21), McIntyre Ridge Wilderness Characteristics Inventory Unit- Succor Creek Road (8-74), and Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek South (8-94) due to angles of observation that would exceed 225 degrees. People's views from Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek South (8-94) would experience high impacts associated with the scale of Malheur A Alternative in the middleground because the project components would visually dominate people's views from this platform.

Linear Viewing Platforms

Foreground: Impacts to people's views that are travelling along linear platforms associated with the Malheur A Alternative would vary from negligible to high. Of the five linear platforms associated with this alternative, three would have views of the project components in the foreground. People's views of the project components would be predominantly skylined in the foreground from Owyhee River Canyon Entry and U.S. Highway 20 resulting in high impacts to visibility conditions. A high magnitude of impact would occur for people travelling along Mitchell Butte Road, Owyhee River Canyon Entry, and U.S. Highway 20due to an angle of view in the foreground that would be predominantly head-on.

Middleground: People traveling along four of the five linear platforms associated with the Malheur A Alternative would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for Mitchell Butte Road, Owyhee River Canyon Entry, and U.S. Highway 20. The amount of the project that people would see in the middleground would be high for Meek Cutoff Study Trail, Mitchell Butte Road, and the Oregon National Historic Trail. These three linear platforms would experience views of 94-100% of the surrounding project components. In addition, Meek Cutoff Study Trail and the Oregon National Historic Trail would also have a high degree of impact in the middleground because people travelling along these platforms would see project components along 100 percent of the platforms. The project components associated with the Malheur A Alternative would create negligible to moderate levels of impacts related to the scale of the components in relationship to the surrounding landscape as viewed from these linear platforms.

Special Management Areas

Four SMAs would include views of the project components, with impacts ranging from negligible to high in either the foreground or middleground. The Malheur A Alternative would not be visible in the foreground from the Owyhee Views ACEC, the VRM Class I surrounding Owyhee Lake, and Wild Horse Basin Wilderness Characteristics Inventory Unit. People's views from a portion of the Owyhee Below the Dam ACEC would include predominantly skylined views of the project components, resulting in a high impact to this SMA in the foreground and middleground. The scale of the project would also be visually dominant from this ACEC.

Summary of Direct Impacts—Section of Proposed Action Equivalent to and Malheur S and Malheur A Alternatives

The following information provides a succinct summary of potential impacts for the equivalent section of the Proposed Action to the Malheur A and Malheur S Alternatives. The information is organized based on the general headings provided in Table 3-174.

Scenic Quality

Foreground: Based on the large scale of the transmission line towers in comparison to the rolling landforms and low sage steppe vegetation, the existing landscape in the Treasure Valley (MA-039), Sourdough Basin (MA-041), Owyhee Tunnel (MA-060), and Owyhee River (MA-122) VAUs would experience high magnitude of change in scenic quality within the foreground of the Proposed Action and a moderate magnitude of change in the North Alkali (MA-075) VAU. The magnitude of change in the remaining nine VAUs would range from low to none.

Middleground: Within the middleground, views of the Proposed Action would be limited by the increased distance and the variable rolling landforms, resulting in a predominantly negligible magnitude of impact.

Landscape Character

The magnitude of change in landscape character associated with the Proposed Action would be limited by the increased distance and the variable rolling landforms, resulting in limited visibility of the project components. However in the Treasure Valley (MA-039), Sourdough Basin (MA-041), and Owyhee Tunnel (MA-060) VAUs the magnitude of change in landscape character would be high because of the dominant scale of the transmission line towers in comparison to the features found in the existing landscape.

Stationary Viewing Platforms

Foreground: There would be no impacts to people from 10 of the 12 stationary platforms associated with the Proposed Action because the project components would not be visible from these locations. People's views from the Lower Owyhee Interpretive site (8-52) would be predominantly skylined in the foreground, resulting in a high degree of impact with respect to visibility conditions. High impacts would also occur to views from Double Mountain Wilderness Characteristics Inventory Unit-Twin Springs Road (8-33) in the foreground due to a degree of exposure to the project that exceeds 225 degrees.

Middleground: Impacts in the middleground of the 5of the 12 stationary platforms would range from negligible to moderate. The project components associated with the Proposed Action would create negligible to moderate levels of impacts related to the scale of the components in relationship to the surrounding landscape as viewed from these linear platforms.

Linear Viewing Platforms

Foreground: Impacts to people's views that are travelling along linear platforms associated with the Proposed Action would vary from negligible to high. Of the five linear platform associated with this section of the alternative, three would have views of the project components in the foreground. People's views of the project components would be predominantly skylined in the foreground from Mitchell Butte Road, Owyhee River Canyon Entry, and U.S. Highway 20, resulting in high impacts to visibility conditions. Views would also be highly impacted by predominantly head-on views of project components in the foreground for these same three linear platforms. Views from Mitchell Butte Road and U.S. Highway 20 would experience high impacts associated with the scale of the project components in the foreground because these components would visually dominate people's views from these platforms.

Middleground: People traveling along four of the five linear platforms associated with the Proposed Action would experience a high degree of impact in the middleground relating to visibility conditions because people's views of the project components would be predominantly skylined. People's views would also be highly impacted by predominantly head-on views of project components in the middleground for Mitchell Butte Road, Owyhee River Canyon Entry, and U.S. Highway 20. People traveling along the Oregon National Historic Trail and Owyhee River Canyon Entry Road would experience views of 83-100 percent of the surrounding project components, resulting in high impacts to views from these platforms. A high degree of impact in the middleground would occur along Meek Cutoff Study Trail, Oregon National Historic Trail, and U.S. Highway 20 because people travelling along these platforms would see the Proposed Action along 87-100 percent of the platforms. The project components would also be seen 86 percent of the total travel time on the Oregon National Historic Trail within the analysis area, resulting in a high magnitude of impact for this linear platform.

Special Management Areas

The Owyhee Below the Dame ACEC would include views of the project components, with impacts ranging from low to high. People's views from portions of this ACEC would include predominantly skylined views of the project components, resulting in a high impact to the Owyhee Below the Dame ACEC in the foreground and middleground.

Comparison of Malheur S Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Malheur S Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Malheur S Alternative would have 48% more highly impacted acres than the Proposed Action. The Proposed Action would have more than 6,300 moderately impacted acres, as compared to no moderately impacted acres for the Malheur S Alternative.

Landscape Character

The Malheur S Alternative would have 45% more highly impacted acreage than the equivalent section of the Proposed Action. The Proposed Action would have approximately 220 moderately impacted acres, as compared to no moderately impacted acres for the Malheur S Alternative.

Stationary Viewing Platforms

The Malheur S Alternative would have more high impacts than the Proposed Action with regard to visibility conditions, angles of observation, and perceived scale. The Proposed Action would have no high impacts with regard to viewers at the stationary platforms. The Proposed Action would have more moderate impacts with regard to angles of observation and perceived scale than the Malheur S Alternative.

Linear Viewing Platforms

The Malheur S Alternative would have no high impacts than the equivalent section of the Proposed Action with regard to viewers on the linear platforms. The Proposed Action would have more high impacts with regard to all of the factors of viewer sensitivity, including visibility conditions, angles of observation, magnitude of project components visible, magnitude of platform affected, magnitude of duration of view and perceived scale.

Malheur S Alternative would have more moderate impacts than the Proposed Action with regard to angles of observation, magnitude of project components visible, magnitude of platform affected, and perceived scale. The Proposed Action would have more moderate impacts with regard to visibility conditions and magnitude of duration of view than the Malheur S Alternative.

Special Management Areas

Malheur S Alternative would have more high impacts with regard to visibility conditions than the equivalent section of the Proposed Action. In addition, the Malheur S Alternative would have more moderate impacts with regard to angles of observation, magnitude of project components visible, and perceived scale than the Proposed Action.

Comparison of Malheur A Alternative to Equivalent Section of Proposed Action

The following information provides a succinct summary of potential impacts to compare the Malheur A Alternative with the equivalent section of the Proposed Action. The information is organized based on the general headings provided in Table 3-175.

Scenic Quality

The Malheur A Alternative would have 45% more highly impacted acres than the equivalent section of the Proposed Action as well as having twice as many moderately impacted acres.

Landscape Character

The Malheur A Alternative would have 12% more highly impacted acreage and 24% more moderately impacted acreage than the Proposed Action.

Stationary Viewing Platforms

The Malheur A Alternative would have more high impacts than the equivalent section of the Proposed Action with regard to visibility conditions, angles of observation, and perceived scale. In addition, the Malheur A Alternative would have more moderate impacts with regard to visibility conditions than the Proposed Action. The Proposed Action would have more moderate impacts as compared to the Malheur A Alternative with regard to angles of observation and perceived scale.

Linear Viewing Platforms

The Malheur A Alternative would have more high impacts than the Proposed Action with regard to visibility conditions and angles of observation. The Proposed Action would have more high impacts with regard to magnitude of project components visible, magnitude of platform affected, magnitude of duration of view and perceived scale.

Malheur A Alternative would have more moderate impacts than the equivalent section of the Proposed Action with regard to magnitude of project components visible, magnitude of platform affected, magnitude of duration of view and perceived scale. The Proposed Action Compare-to segment would have more moderate impacts with regard to visibility conditions than the Malheur A Alternative.

Special Management Areas

Malheur A Alternative would have an impact of four SMAs as compared to one from the Proposed Action. The Proposed Action would have more moderate impacts with regard to angles of observation, magnitude of project components visible, and perceived scale than the Malheur A Alternative with regards to the Owyhee Below the Dam ACEC.

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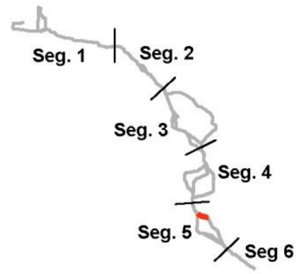
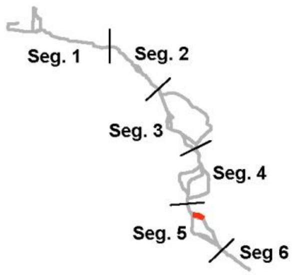
Table 3-170. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Double Mountain Alternative



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
MA-039 Treasure Valley															23/N	B	NC	None	NC	N	None
MA-041 Sourdough Basin															50/M	C	C	H	NC	N	H
MA-044 Westfall/Harper Valley															None	B	NC	None	NC	None	None
MA-058 Hoodoo Ridge															49/M	C	NC	None	NC	N	None
MA-119 Danger Point															None	B	NC	None	NC	None	None
MA-121 Big Sage Flat															12/N	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
8-33 Double Mountain Wilderness Inventory Unit - Twin Springs Road	L	L	H	M							6/N	3/N	M	M							
8-88 Broken Rim Wilderness Inventory Unit - Hoo Doo Road North	None	L	None	N							None	9/N	None	L							
8-90 Double Mountain Wilderness Inventory Unit - Rock Canyon Road	L	L	H	L							6/N	8/N	M	M							
Linear Viewing Platforms																					
US-20	None	None	None	None	None	1/N	None	100/H	None	7/N			None	None							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

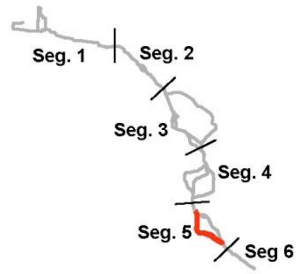
Table 3-171. Summary of Impacts by Visual Analysis Units and Stationary and Linear Sensitive Platforms—Section of the Proposed Action Equivalent to the Double Mountain Alternative



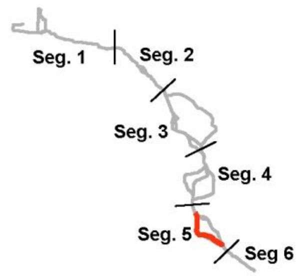
	Sensitive Viewing Platforms															Scenic Quality					
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
MA-039 Treasure Valley															48/M	B	NC	None	NC	N	None
MA-041 Sourdough Basin															55/M	C	C	H	C	L	H
MA-044 Westfall/Harper Valley															0/None	B	NC	None	NC	None	None
MA-058 Hoodoo Ridge															39/L	C	NC	None	NC	N	None
MA-119 Danger Point															0/None	B	NC	None	NC	None	None
MA-121 Big Sage Flat															36/L	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
8-33 Double Mountain Wilderness Inventory Unit - Twin Springs Road	L	L	H	L							4/N	5/N	M	M							
8-88 Broken Rim Wilderness Inventory Unit - Hoo Doo Road North	None	L	None	N							None	23/L	None	L							
8-90 Double Mountain Wilderness Inventory Unit - Rock Canyon Road	None	L	None	L							None	9/L	None	M							
Linear Viewing Platforms																					
US-20	None	L	None	M	None	24/L	None	100/H	None	15/N			None	N							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table 3-172. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Malheur S Alternative



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
MA-039 Treasure Valley															64/M	B	NC	N	B	L	N
MA-041 Sourdough Basin															60/M	C	C	H	C	M	H
MA-044 Westfall/Harper Valley															52/M	B	NC	None	B	L	None
MA-058 Hoodoo Ridge															66/M	C	C	H	C	L	H
MA-059 Grassy Mountain															23/L	A	NC	None	NC	N	None
MA-060 Owyhee Tunnel															65/M	B	C	M	C	L	M
MA-073 Iron Mountain															30/L	A	NC	None	NC	N	None
MA-074 Board Coral															53/M	C	C	H	C	L	H
MA-075 North Alkali															66/M	C	C	H	C	L	H
MA-077 Antelope Springs															45/M	C	NC	N	NC	N	None
MA-078 Succor Creek															21/L	A	NC	N	A	L	N
MA-119 Danger Point															39/L	B	NC	None	NC	N	None
MA-122 Owyhee River															72/M	B	B	H	B	L	H
OW-001 Owyhee Mountains															19/N	C	NC	None	NC	N	None
OW-019 Treasure Valley															57/M	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
8-102 Succor Creek Rural Area	None	L	None	L							None	24/L	None	N							
8-85 Sourdough Mountain Wilderness Inventory Unit - Twin Springs Road	M	M	M	M							5/N	8/N	H	H							
8-88 Broken Rim Wilderness Inventory Unit - Hoo Doo Road North	M	M	N	L							2/N	26/L	M	L							
8-90 Double Mountain Wilderness Inventory Unit - Rock Canyon Road	None	L	None	M							None	12/N	None	M							
8-91 Double Mountain Wilderness Inventory Unit Characteristic Area - Twin Springs Road	None	L	None	H							None	6/N	None	L							
8-93 Double Mountain Wilderness Inventory Unit - Negro Rock Creek Middle	None	M	None	M							None	<1/N	None	L							
8-94 Double Mountain Wilderness Inventory Unit - Negro Rock Creek South	H	M	H	H							11/N	14/N	H	M							

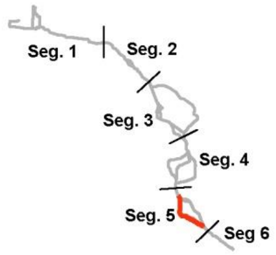


	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
8-18 Lake Owyhee State Park	None	None	None	None							None	None	None	None							
8-21 McIntyre Ridge Wilderness Inventory Unit	None	None	None	None							None	None	None	None							
8-4 Board Corral Mountain Wilderness Inventory Unit	None	H	None	M							None	24/L	None	L							
8-74 McIntyre Ridge Wilderness Inventory Unit - Succor Creek Road	None	M	None	H							None	7/N	None	L							
8-75 Antelope Creek Wilderness Inventory Unit	None	None	None	None							None	None	None	None							
8-37 Succor Creek State Natural Area – North	None	None	None	None							None	None	None	None							
8-52 Lower Owyhee Interpretive Site	None	None	None	None							None	None	None	None							
8-84 Burnt Mountain Wilderness Inventory Unit	N	M	N	L							2/N	5/N	H	M							
8-95 Lake Owyhee River Site H2	None	M	None	L							None	<1/N	None	M							
8-96 Lake Owyhee River Site H1	None	M	None	L							None	16/N	None	M							
Linear Viewing Platforms																					
Meek Cutoff Study Trail	None	H	None	L	None	100/H	None	100/H	None	43/M			None	N							
Mitchell Butte Road	N	L	M	M	5/N	96/H	25/L	100/H	6/N	25/L			N	N							
Oregon National Historic Trail [1]	None	H	None	L	None	100/H	None	100/H	None	68/M			None	N							
Owyhee River Canyon Entry Road	H	H	H	H	45/M	54/M	62/M	38/L	32/L	20/N			M	L							
US-20	H	M	H	H	37/L	63/M	21/L	79/M	14/L	43M			M	L							
Special Management Areas																					
Owyhee Below Dam ACEC	H	H	M	L							33/L	32/L	M	L							
Owyhee Views ACEC	None	L	None	M							None	27/L	None	N							
Wild Horse Basin WSA - OR-034-118	None	N	None	N							None	None	None	N							
VRM Class I surrounding Owyhee Lake	None	L	None	M							None	27/L	None	N							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

1 **Table 3-173. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Malheur A Alternative**



	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality						Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
MA-039 Treasure Valley															59/M	B	NC	N	NC	N	None
MA-041 Sourdough Basin															59/M	C	C	H	NC	N	H
MA-044 Westfall/Harper Valley															52/M	B	NC	None	NC	N	None
MA-058 Hoodoo Ridge															66/M	C	C	H	C	L	H
MA-059 Grassy Mountain															31/L	A	NC	N	NC	N	None
MA-060 Owyhee Tunnel															62/M	B	C	M	C	L	M
MA-062 Hurley															None	C	NC	None	NC	None	None
MA-073 Iron Mountain															56/M	A	NC	N	NC	N	None
MA-074 Board Coral															64/M	C	C	H	C	L	H
MA-075 North Alkali															68/M	C	C	H	C	L	H
MA-077 Antelope Springs															60/M	C	NC	N	NC	N	None
MA-078 Succor Creek															34/L	A	NC	N	NC	N	N
MA-119 Danger Point															39/L	B	NC	None	NC	N	None
MA-122 Owyhee River															74/M	B	B	M	B	M	M
OW-001 Owyhee Mountains															19/N	C	NC	None	NC	N	None
OW-019 Treasure Valley															59/M	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
8-18 Lake Owyhee State Park	None	H	None	M							None	1/N	None	L							
8-21 McIntyre Ridge Wilderness Inventory Unit	None	M	None	H							None	<1/N	None	L							
8-37 Succor Creek State Natural Area - North	None	None	None	None							None	None	None	None							
8-4 Board Corral Mountain Wilderness Inventory Unit	H	M	M	M							5/N	21/L	L	L							
8-74 McIntyre Ridge Wilderness Inventory Unit - Succor Creek Road	None	L	None	H							None	8/N	None	L							
8-75 Antelope Creek Wilderness Inventory Unit	None	None	None	None							None	None	None	None							
8-84 Burnt Mountain Wilderness Inventory Unit	M	M	H	L							15/N	19/N	H	M							
8-85 Sourdough Mountain Wilderness Inventory Unit - Twin Springs Road	L	M	M	M							5/N	8/N	H	H							
8-88 Broken Rim Wilderness Inventory Unit - Hoo Doo Road North	M	M	N	L							2/N	36/L	M	L							

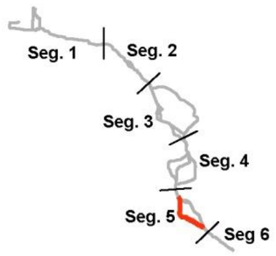
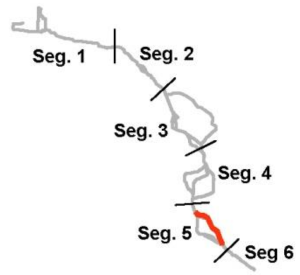
	Sensitive Viewing Platforms																	Scenic Quality					
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship		% of Project Visible in VAU	Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	Landscape Character FG Impact
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
8-90 Double Mountain Wilderness Inventory Unit - Rock Canyon Road	None	L	None	L							None	12/N	None	M							
8-91 Double Mountain Wilderness Inventory Unit Characteristic Area - Twin Springs Road	None	L	None	N							None	1/N	None	L							
8-93 Double Mountain Wilderness Inventory Unit - Negro Rock Creek Middle	None	M	None	M							None	<1/N	None	L							
8-94 Double Mountain Wilderness Inventory Unit - Negro Rock Creek South	H	M	H	H							11/N	14/N	H	M							
8-95 Lower Owyhee River Site H2	M	M	H	L							<1/N	16/N	H	M							
8-96 Lower Owyhee River Site H1	None	M	None	L							None	8/N	None	M							
8-102 Succor Creek Rural Area	None	L	None	L							None	25/L	None	N							
Linear Viewing Platforms																					
Meek Cutoff Study Trail	None	H	None	L	None	100/H	None	100/H	None	50/M			None	N							
Mitchell Butte Road	N	L	H	H	6/N	94/H	25/L	50/M	<1/N	13/N			N	N							
Oregon National Historic Trail [1]	None	H	None	L	None	100/H	None	100/H	None	6/N			None	N							
Owyhee River Canyon Entry Road	H	H	H	H	44/L	56/M	48/M	52/M	24/L	32/L			M	M							
US-20	H	H	H	H	37/L	63/M	21/L	79/M	7/N	50/M			M	L							
Special Management Areas																					
VRM Class I surrounding Owyhee Lake	None	M	None	L							None	49/M	None	L							
Owyhee Below Dam ACEC	H	H	M	N							33/L	30/L	H	L							
Owyhee Views ACEC	None	M	None	N							None	47/M	None	L							
Wild Horse Basin WSA, OR-034-118	None	M	None	M							None	17/N	None	N							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Table 3-174. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms, and Special Management Areas—Section of the Proposed Action Equivalent to the Malheur S and Malheur A Alternatives

	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
Visual Analysis Units																					
MA-039 Treasure Valley															87/H	B	B	H	B	L	H
MA-041 Sourdough Basin															66/M	C	C	H	NC	N	H
MA-044 Westfall/Harper Valley															16/N	B	NC	None	NC	N	None
MA-058 Hoodoo Ridge															58/M	C	NC	None	NC	N	None
MA-060 Owyhee Tunnel															50/M	B	C	H	NC	N	H
MA-074 Board Coral															22/L	C	NC	None	NC	N	None
MA-075 North Alkali															63/M	C	C	M	C	L	M
MA-077 Antelope Springs															51/M	C	C	L	NC	N	None
MA-078 Succor Creek															17/N	A	NC	N	NC	N	N
MA-119 Danger Point															27/L	B	NC	None	NC	N	None
MA-121 Big Sage Flat															59/M	B	NC	N	NC	N	N
MA-122 Owyhee River															30/L	B	B	H	NC	N	None
OW-001 Owyhee Mountains															20/N	C	NC	None	NC	N	None
OW-019 Treasure Valley															71/M	B	NC	None	NC	N	None
Stationary Viewing Platforms																					
8-21 McIntyre Ridge Wilderness Inventory Unit	None	None	None	None							None	None	None	None							
8-33 Double Mountain Wilderness Inventory Unit - Twin Springs Road	L	L	H	M							3/N	11/N	M	M							
8-37 Succor Creek State Natural Area – North	None	None	None	None							None	None	None	None							
8-4 Board Corral Mountain Wilderness Inventory Unit	None	M	None	M							None	9/N	None	L							
8-51 Big Bend Access Site	None	None	None	None							None	None	None	None							
8-52 Lower Owyhee Interpretive Site	H	None	N	None							N	None	L	None							
8-55 Adrian Community	None	None	None	None							None	None	None	None							
8-74 McIntyre Ridge Wilderness Inventory Unit - Succor Creek Road	None	None	None	None							None	None	None	None							
8-75 Antelope Creek Wilderness Inventory Unit	None	None	None	None							None	None	None	None							

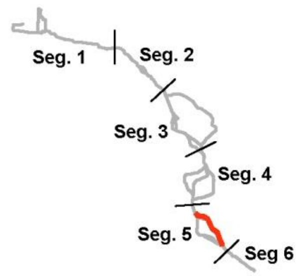
	Sensitive Viewing Platforms														% of Project Visible in VAU	Scenic Quality					Landscape Character FG Impact
	Visibility Conditions		Angle of View		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Miles of Project Seen from Stationary Platform (%)		Scale and Spatial Relationship			Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	
	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG							
8-88 Broken Rim Wilderness Inventory Unit - Hoo Doo Road North	None	M	None	L							None	16/L	None	M							
8-90 Double Mountain Wilderness Inventory Unit - Rock Canyon Road	None	L	None	L							None	8/N	None	M							
8-102 Succor Creek Rural Area	None	L	None	M							None	40/L	None	N							
Linear Viewing Platforms																					
Meek Cutoff Study Trail	None	H	None	L	None	53/M	None	100/H	None	32/L			None	N							
Mitchell Butte Road	H	H	H	H	33/L	66/M	33/L	66/M	14/N	36/L			H	L							
Oregon National Historic Trail [1]	None	M	None	L	None	100/H	None	100/H	None	86/H			None	L							
Owyhee River Canyon Entry Road	H	H	H	H	16/N	83/H	33/L	66/M	21/L	25/L			M	M							
US 20	H	H	H	H	37/L	63/M	13/N	87/H	14/N	29/L			H	L							
Special Management Areas																					
Owyhee Below the Dam ACEC	H	H	M	M							33/L	32/L	M	L							

Table Abbreviations: ACEC = area of critical environmental concern; NHOTIC = National Historic Oregon Trail Interpretive Center; OHV = off-highway vehicle; VRM = Visual Resource Management; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not available.

Table Notes: [1] The Oregon National Historic Trail occurs in Oregon and Idaho.

Segment 6—Treasure Valley

The Proposed Action is the only action alternative located in Segment 6. The direct impacts from the construction and operation of the Proposed Action are summarized in Section 3.2.7.6. An overview of the detailed and quantified impacts is identified in Table 3-153.

Summary by Magnitude of Impact

Table 3-175 further extracts information from the summary of impacts in Table 3-153 through Table 3-174 to provide a summary of the direct residual impacts of the Proposed Action and alternatives—including the magnitude of impacts in terms of the miles and acres of affect. The magnitude of change to landscape character and scenic quality as well as the magnitude of the effects to views from sensitive viewing platforms are defined in Table 3-152. Information contained in Table 3-175 indicates for example, that there would be approximately 183,000 acres associated with the Proposed Action for which the magnitude of impact to scenic quality would be high (i.e., where the landscape would appear to be severely altered in the foreground); approximately 66,000 acres would have a moderate impact to scenic quality (i.e. the landscape would appear to be substantially altered); and approximately 4,600 acres in the foreground would have negligible impacts to scenic quality (i.e., the landscape would appear to be intact).

Similarly, for each of the environmental factors identified in Table 3-175, the miles of the alternative for each of the levels of impact are summarized. These impacts are summarized for stationary and linear platforms, as well as the Special Management Areas—and are provided to quantify the level impact for comparison. For example, in the foreground there would be 20 miles of the Proposed Action that would be considered a high impact to visibility conditions from the Special Management Areas; approximately 10 miles from sensitive stationary platforms; and 165 miles from sensitive linear platforms.

Summary of Scenic Quality Impacts by Visual Analysis Unit

Because BLM scenic quality inventory data is available for the entire route, the BLM's scenic quality rating system was used to disclose impacts to scenic quality for the entire analysis area, regardless of land ownership or management.

Impacts on scenic quality within the analysis area are included in Table 3-176 through Table 3-197. The impacts are provided separately for the Proposed Action and each alternative route, as well as for the equivalent sections of the Proposed Action as associated with each of the alternatives. Within each of these tables, impacts to scenic quality are further separated by foreground and middleground for each VAU within each alternative's analysis area. Impacts are calculated based on the acreage in each VAU that would have views of the project, and are further separated by those that would result in a numerical rating change and those that would result in both a numerical change and a change in classification.

Proposed Action

For the Proposed Action, there would be approximately 7, 533 acres of land that are considered as scenic quality A landscapes from which the project components would be visible. The scenic quality of approximately 17 percent of this scenic quality A landscape would be impacted and 6 percent would be impacted to the degree that the scenic quality rating would change from a scenic quality A to a scenic quality B landscape. There would be 77 percent of the approximately 578,976 acres of scenic quality B landscapes that would be impacted by the Proposed Action. Thirty-four percent would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. Of the remaining approximately 941,751 acres of scenic quality C landscapes from which the Proposed Action would be visible, the project components would impact the scenic quality of 55 percent of the landscape.

Segment 1-Horn Butte Alternative, Longhorn Alternative, Longhorn Variation, and Equivalent Section of the Proposed Action

All of the analysis area within the Horn Butte and Longhorn alternatives and the Longhorn Variation are considered to be scenic quality C landscapes. Of the approximately 180,014 acres of visible land associated with the Horn Butte Alternative's analysis area, the project components would impact the scenic quality of 97 percent of the landscape. Similarly, the project components would lower the scenic quality in 92 percent of the landscape from the Longhorn Alternative (approximately 143,763 visible acres) and from the Longhorn Variation (approximately 159,860 visible acres). The equivalent section of the Proposed Action when compared to these three alternatives would impact 96 percent of the scenic quality C landscapes.

Segment 2- Glass Hill Alternative and Equivalent Section of the Proposed Action

The Glass Hill Alternative would be visible in scenic quality A and B landscapes. The scenic quality of 1 percent of the approximately 1,790 acres of visible scenic quality A landscape would be impacted and 20 percent of the approximately 46,541 acres of scenic quality B landscapes that would be impacted by the Glass Hill Alternative. The equivalent section of the Proposed Action when compared to the Glass Hill Alternative would have a similar impact to 1 percent of the approximately 1,919 acres of scenic quality A landscapes and would impact 100 percent of the approximately 44,865 acres of the visible scenic quality B landscapes.

Segment 3- Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives and Equivalent Sections of the Proposed Action

The Flagstaff and Burnt River Mountain alternatives and the equivalent sections of the Proposed Action would be visible in scenic quality B and C landscapes. In addition to scenic quality B and C landscapes, the Timber Canyon Alternative would also have scenic quality A landscapes. Twenty percent of the approximately 41,737 acres of scenic quality B landscapes and 13 percent of the approximately 34,736 acres of scenic quality C landscapes would be impacted by the construction of the Flagstaff Alternative. In comparison, the equivalent section of the Proposed Action would impact 100 percent of the approximately 56,595 acres of scenic quality B landscapes, and 94 percent would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. Twenty-two percent of the 41,848 acres of scenic quality C landscape would be impact in the section of the Proposed Action comparable to the Flagstaff Alternative.

The scenic quality of 22 percent of the approximately 58,076 acres of visible scenic quality B landscape within the analysis area of the Burnt River Mountain Alternative would be impacted and 12 percent would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. In addition, 79 percent of the approximately 10,387 acres of scenic quality C landscapes would be lowered. The equivalent section of the Proposed Action when compared to the Burnt River Mountain Alternative would lower all of both the approximately 61,844 acres of scenic quality B landscapes and the approximately 10,083 acres of scenic quality C landscapes. In addition, 34 percent of the scenic quality B landscapes where the Proposed Action would be visible would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape.

The Timber Canyon Alternative would be visible in scenic quality A, B, and C landscapes. The scenic quality of all the approximately 7,930 acres of visible scenic quality A landscape would be impacted and 82 percent of the approximately 244,605 acres of scenic quality B landscapes would be impacted. Five percent of the scenic quality B landscapes where the Timber Canyon Alternative would be visible would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. The equivalent section of the Proposed Action when compared to the Timber Canyon Alternative would impact 96 percent of the approximately 157,466 acres of scenic quality B landscapes and impact 89 percent of the approximately 66,398 acres of scenic quality C landscapes. This section of the Proposed Action would also impact 72 percent of the scenic quality B landscapes to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape.

Segment 4-Willow Creek and Tub Mountain South Alternatives and Equivalent Sections of the Proposed Action

The Willow Creek and Tub Mountain South alternatives and the equivalent sections of the Proposed Action would be visible in scenic quality B and C landscapes. The scenic quality of 98 percent of the approximately 45,287 acres of visible scenic quality B landscape within the analysis area of the Willow Creek Alternative would be impacted and 34 percent would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. In addition, 99 percent of the approximately 81,063 acres of scenic quality C landscapes would be lowered. The equivalent section of the Proposed Action when compared to the Willow Creek Alternative would lower 89 percent the approximately 62,902 acres of scenic quality B landscapes and 83 per cent of the approximately 84,404 acres of scenic quality C landscapes. In addition, 49 percent of the scenic quality B landscapes where the Proposed Action would be visible would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape.

The Tub Mountain South Alternative would impact 93 per cent of the approximately 52,803 acres of visible scenic quality B landscape would be impacted and all of the approximately 92,788 acres of scenic quality C landscapes would be impacted. Where the Tub Mountain South Alternative would be visible, six percent of the scenic quality B landscapes would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. The equivalent section of the Proposed Action when compared to the Tub Mountain South Alternative would impact 85 percent of the approximately 68,163 acres of scenic quality B landscapes and impact 85 percent of the approximately 96,723 acres of scenic quality C landscapes. This section of the Proposed Action would also impact 47 percent of the scenic quality B landscapes to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape.

Segment 5-Double Mountain, Malheur S, and Malheur A Alternatives and Equivalent Sections of the Proposed Action

The Double Mountain Alternative and the section of the Proposed Action equivalent to the Double Mountain Alternative would both only impact scenic quality C landscapes; there would be no change to the scenic quality B landscapes in either alternative. The Double Mountain Alternative would impact 18 percent of the approximately 43,868 acres of visible scenic quality C landscape and the Proposed Action would impact 88 percent of the approximately 42,609 acres of scenic quality C landscapes.

The Malheur S Alternative would be visible in scenic quality A, B, and C landscapes. The scenic quality of six percent the approximately 5,072 acres of visible scenic quality A landscape would be impacted and 82 percent of the approximately 50,774 acres of scenic quality B landscapes would be impacted. Thirty-seven percent of the scenic quality B landscapes where the Malheur S Alternative would be visible would be impacted to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. The Malheur S Alternative would impact 96 percent of the approximately 119,289 acres of visible scenic quality C landscape. The Malheur A Alternative would not impact the approximately 8,131 acres of scenic quality A landscapes. This alternative would impact 47 percent of the approximately 48,324 acres of scenic quality B landscapes and impact 57 percent of the approximately 121,434 acres of scenic quality C landscapes. The Malheur A Alternative would also impact 36 percent of the scenic quality B landscapes to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape. The section of the Proposed Action equivalent to the Malheur S and Malheur A alternatives would not impact the approximately 366 acres of scenic quality A landscapes. The Proposed Action would impact65 percent of the approximately 67,410 acres of scenic quality B landscapes and impact 36 percent of the approximately 89,788 acres of scenic quality C landscapes. The Proposed Action would also impact five percent of the scenic quality B landscapes to the degree that the scenic quality rating would change from a scenic quality B to a scenic quality C landscape.

Segment 6-Proposed Action

THE PROPOSED ACTION IS THE ONLY ACTION ALTERNATIVE LOCATED IN SEGMENT 6. IMPACTS ON SCENIC QUALITY WITHIN THE ANALYSIS AREA OF THE PROPOSED ACTION ARE PROVIDED IN TABLE 3-176.

Table 3-175. Summary of Impacts of the Proposed Action and Alternatives by Magnitude of Impact, Scenic Quality, Landscape Character, and Views from Sensitive Platforms

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms											
					Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
Proposed Action (Segments 1, 2, 3, 4, 5, and 6)	H	183,114	0	7,361	SP- 9.7 LP- 165 SMA- 20	SP- 34.2 LP- 51.8 SMA- 5	SP- 5 LP-39	SP- 25.5 LP- 84.2	SP- 0 LP- 4.8	SP- 0 LP- 204.9	LP- 0	LP- 174.3	LP- 0	LP- 281	SP- 1.6 LP- 84.3	SP- 0 LP- 0
	M	65,970	303,680	2,285	SP- 92.7 LP- 8.8	SP- 92.7 LP- 166.5 SMA-3.5	SP- 3.9 LP- 5.8 SMA-20	SP- 124.2 LP- 10.4 SMA- 23.5	SP- 0 LP- 4.7 SMA-16.8	SP- 68 LP- 135 SMA - 16.8	LP-14.5	LP- 168.4	LP- 0	LP- 755	SP- 7.1 LP- 77.8 SMA- 20	SP- 28.5 LP- 35
	L	0	435,076	0	SP- 1.9 LP- 0	SP- 74 LP- 135.2 SMA -15	SP- 2.4 LP- 124	SP- 39.6 LP- 258.9	SP- 1.9 LP- 66	SP- 64.7 LP- 1.5	LP-85.1	LP- 10.8	LP- 162	LP- 212	SP- 1.88 LP- 6.7	SP- 68.3 LP- 282.8 SMA-23.5
	N	4,636	263,525	198	SP- 1.1 LP- 0	SP- 89.6 LP- 0	SP- 2.0 LP- 0	SP- 26.08 LP- 0	SP- 12.1 LP- 93.3	SP-88.5 LP- 12.1	LP- 67.2	LP- 0	LP-128	LP- 185	SP- 2.73 LP- 0	SP-118.1 LP- 35.7
Horn Butte Alternative (Segment 1)	H	25,950	0	874	SP-5.9 LP-9	SP- 14.7 LP- 26	SP- 0 LP- 5	SP- 0 LP- 2	SP- 0 LP- 4.7	SP- 0 LP- 22.4	LP- 0	LP- 22.4	LP-0	LP- 0	SP- 0 LP- 5	SP- 0 LP- 0
	M	0	146,369	0	SP- 0 LP- 4.7	SP- 15 LP- 0	SP-5.9 LP- 8.7	SP- 23 LP- 1.6	SP- 5.9 LP- 0	SP- 10.9 LP- 8.7	LP- 8.7	LP- 0	LP-0	LP- 61	SP- 5.9 LP- 4.7	SP- 10.9 LP- 22.4
	L	0	0	0	SP- 0 LP- 0	SP- .8 LP- 0	SP- .19 LP- 0	SP- 6.7 LP- 22.4	SP- 0 LP- 2	SP- 12.1 LP- 0	LP- 0	LP- 3.6	LP-50	LP-0	SP- 0 LP- 4	SP- 12.1 LP- 3.6
	N	0	7,695	0	SP- .21 LP- 0	SP- 0 LP- 0	SP- .02 LP- 0	SP- .8 LP- 0	SP- .21 LP- 1.6	SP- 7.5 LP- 5	LP- 5	LP- 0	LP-14	LP-23	SP- .21 LP- 0	SP- 7.5 LP- 0
Longhorn Variation (Segment 1)	H	17,491	0	692	SP- 2.8 LP- 6.1	SP- 24.6 LP- 0	SP- 0 LP- 6.1	SP- 0 LP- 27.8	SP- 0 LP- 0	SP- 0 LP- 0	LP-0	LP-14.2	LP- 0	LP-0	SP- 1.2 LP- 1.1	SP- 0 LP- 0
	M	0	0	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 2.8 LP- 0	SP- 16 LP- 0	SP- 0 LP-0	SP- 18.5 LP- 15	LP-0	LP-15	LP-0	LP- 6	SP- 1.6 LP- 5	SP-16 LP- 0
	L	0	129,224	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 8.6 LP- 1.4	SP- 0 LP- 5	SP- 6.1 LP- 0	LP- 5	LP- 0	LP- 0	LP-0	SP- 0 LP- 0	SP- 0 LP- 27.8
	N	0	13,145	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP-0	SP- 0 LP- 0	SP- 2.8 LP-1.1	SP- 0 LP- 0	LP-1.1	LP- 0	LP-26	LP-0	SP- 0 LP- 0	SP- 8.6 LP- 1.4
Longhorn Alternative (Segment 1)	H	21,123	0	595	SP- 0 LP- 6.9	SP-7.7 LP- 28.2	SP- 0 LP- 6.9	SP- 0 LP- 27	SP- 0 LP- 0	SP- 0 LP- 21.2	LP- 0	LP- 21.2	LP-0	LP- 0	SP- 0 LP- 2.9	SP- 0 LP- 0
	M	0	0	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 7.7 LP- 0	SP- 0 LP- 0	SP- 0 LP- 7	LP- 0	LP- 0	LP- 0	LP- 196	SP- 0 LP- 4	SP- 0 LP- 7
	L	0	110,570	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 1.2	SP- 0 LP- 0	SP- 7.7 LP- 0	LP- 2.9	LP- 7	LP- 22	LP- 0	SP- 0 LP- 0	SP- 7.7 LP- 20

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms											
					Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
	N	0	12,070	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 6.9	SP- 0 LP- 0	LP- 4	LP- 0	LP- 13	LP- 0	SP- 0 LP- 0	SP- 0 LP- 1.2
Section of the Proposed Action Equivalent to the Horn Butte and Longhorn Alternatives and Longhorn Variation (Segment 1)	H	25,980	0	914	SP- 1.3 LP-9.9	SP- 28.8 LP-25.2	SP- 1.3 LP- 9.9	SP- 0 LP- 23.6	SP- 0 LP- 4.7	SP- 0 LP- 22.6	LP- 0	LP- 22.6	LP- 0	LP-0	SP- 0 LP-4.9	SP- 0 LP- 0
	M	0	158,622	144	SP- 0 LP- 4.7	SP- 15 LP- 0	SP- 0 LP- 4.7	SP- 38.8 LP- 1.6	SP- 1.3 LP- 5	SP- 41.7 LP- 0	LP- 9.7	LP- 0	LP- 89	LP-61	SP-1.3 LP- 4.7	SP-15.5 LP- 22.6
	L	0	0	0	SP- 0 LP- 0	SP-.8 LP- 0	SP- .19 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 2.6	LP- 0	LP- 2.6	LP- 0	LP-0	SP- 0 LP- 5	SP-12.1 LP- 2.6
	N	0	0	0	SP- .21 LP- 0	SP- 0 LP- 0	SP- .02 LP- 0	SP- 5.8 LP- 0	SP- 1.51 LP- 4.9	SP- 2.9 LP- 2.6	LP- 4.9	LP- 0	LP-15	LP-22	SP-.21 LP- 0	SP- 17 LP- 0
Glass Hill Alternative (Segment 2)	H	9,218	0	256	SP-0.5 LP-0	SP-1.2 LP-2.0	SP-0 LP-0	SP-0 LP-2.0	SP-0 LP-0	SP-0 LP-6.3	LP-0	LP-6.3	LP-0	LP-0	SP-0 LP-0	SP-0 LP-0
	M	20	0	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	LP-0	LP-0	LP-0	LP-0	SP-0 LP-0	SP-0 LP-0
	L	0	0	0	SP-0 LP-0	SP-1.1 LP- 4.3	SP-0.5 LP-0	SP-0 LP- 4.3	SP-0 LP-0	SP-1.2 LP-0	LP-0	LP-0	LP-0	LP-49	SP-0.5 LP-0	SP-0.8 LP-0
	N	0	39,093	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP-2.3 LP-0	SP-0.5 LP-0	SP-1.1 LP-0	LP-0	LP-0	LP-0	LP-0	SP-0 LP-0	SP-1.5 LP-6.3
Section of the Proposed Action Equivalent to the Glass Hill Alternative (Segment 2)	H	6,714	0	242	SP-0 LP-0	SP-0 LP-2.0	SP-0 LP-0	SP-1.9 LP-2.0	SP-0 LP-0	SP-0 LP-6.8	LP-0	LP-4.8	LP-0	LP-0	SP-0 LP-0	SP-0 LP-0
	M	17	0	0	SP-0 LP-0	SP- 5.6 LP-0	SP-0 LP-0	SP-3.7 LP-0	SP-0 LP-0	SP-0 LP-0	LP-0	LP-0	LP-0	LP-0	SP-0 LP-0	SP-1.9 LP-0
	L	0	38,151	0	SP-0.1 LP-0	SP-1.1 LP-4.8	SP-0 LP-0.6	SP-0 LP-4.8	SP-0 LP-0	SP-1.1 LP-0	LP-0	LP-0	LP-0	LP-45	SP-0 LP-0	SP-3.7 LP-4.8
	N	0	0	0	SP-0 LP-0.6	SP-0 LP-0	SP-0.1 LP-0	SP-1.1 LP-0	SP-0.1 LP-0.6	SP-5.6 LP-0	LP-0.6	LP-2	LP- 0	LP-0	SP-0.1 LP-0.6	SP-1.1 LP-2.0
Flagstaff Alternative (Segment 3)	H	12,267	0	475	SP- 0 LP- 10.1	SP- 0 LP-0	SP-0 LP- 4.1	SP-0 LP- 20.0	SP-0 LP-0	SP-0 LP- 44.7	LP-0	LP- 17.0	LP-0	L0	SP-0 LP- 1.1	SP-0 LP-0
	M	0	0	0	S -0 LP- 3.0	SP- 0 LP-7.0	SP- 1.7 LP-0 SMA-3.1	SP-0 LP-0 SMA- 3.1	SP-0 LP-0 SMA-3.1	SP-0 LP-30.1 SMA- 3.1	LP-0	LP- 40.0	LP-0	LP-282	SP-0 LP- 4.2 SMA-3.1	SP- 2.2 LP-0
	L	0	0	0	SP- 1.7 LP- 3.2 SMA-3.1	SP-5.1 LP- 51.7 SMA-3.1	SP-0 LP- 12.2	SP- 2.9 LP-38.7	SP-0 LP-10	SP- 0.6 LP-0	LP- 13.6	LP- 1.7	LP- 22	LP-33	SP- 1.7 LP- 10	SP-2.9 LP-13.4 SMA 3.1

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms: Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
	N	0	64,251	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP- 2.2 LP-0	SP-0 LP- 6.3	SP-4.5 LP- 10.0	LP- 2.7	LP-0	LP- 56	LP- 6	SP-0 LP-0	SP-0 LP-45.3
Section of the Proposed Action Equivalent to the Flagstaff Alternative (Segment 3)	H	13,399	0	467	SP- 1.0 LP- 17.1	S – 4.5 LP- 19.7 SMA- 3.6	SP-0 LP- 13.1	SP-0 LP-55.2	SP-0 LP-0	SP-0 LP- 57 SMA-3.6	LP-0	LP- 59.5	LP- 0	LP- 0	SP- 1.0 LP- 10.8 SMA-4.5	SP-0 LP-0
	M	0	49,224	0	SP-0 LP-0	SP- 9.5 LP- 25.5 SMA-4.5	SP-0 LP-0 SMA-4.5	SP- 11.3 LP-0 SMA-8.1	SP-0 LP-0 SMA-4.5	SP-0 LP-22.2 SMA-4.5	LP-0	LP- 19.7	LP-0	LP- 283	SP-0 LP-0	SP- 9.5 L – 45.9 SMA- 4.5
	L	0	3,323	0	SP-0 LP-0 SMA-4.5	SP- 7.5 LP-34.0	SP-1.0 LP-4.0	SP-7.7 L – 24.0	SP-0 LP-7.0	SP- 2.0 LP-0	LP- 9.0	LP-0	LP- 43	LP-0	SP-0 LP-4.3 (2)	SP- 9.5 LP-0 SMA- 3.6
	N	139	32,348	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP- 2.5 LP-0	SP- 1.0 LP- 10.1	SP-19.5 LP-0	LP-8.1	LP-0	LP- 46	LP-6	SP-0 LP-0	SP- 2.5 LP-33.3
Burnt River Mountain Alternative (Segment 3)	H	8,698	0	235	SP-0 LP-16.0	SP-0 LP-0	SP-0 LP-16.0	SP-0 LP-4.0	SP-0 LP-0	SP-0 LP-40.2	LP-0	LP-4.0	LP-0	LP-0	SP-0.7 LP-5.0	SP-0 LP-0
	M	7,061	0	317	SP-0.3 LP-0	SP-2.2 LP-0	SP-0 LP-0 SMA-2.3	SP-11.4 LP-0 SMA- 2.3	SP-0 LP-0 SMA-2.3	SP-0 LP-4.0 SMA-2.3	LP-0	LP-40.2	LP-0	LP-144	SP-0 LP-11.0 SMA-2.3	SP-0.9 LP-0 SMA-2.3
	L	0	5,050	0	SP-0.7 LP-0 SMA-2.3	SP-10.1 LP-44.2 SMA-2.3	SP-0.7 LP-0	SP-0 L40.2	SP-0 LP-0	SP-10.1 LP-0	LP-16.0	LP-0	LP-20	LP-0	SP-0 LP-0	SP-11.4 LP-40.2
	N	0	47,651	0	SP-0 LP-0	SP-0 LP-0	SP-0.3 LP-0	SP-0.9 LP-0	SP-1.0 LP-16.0	SP-2.2 LP-0	LP-0	LP-0	LP-16	LP-0	SP-0.3 LP-0	SP-0 LP-4.0
Section of the Proposed Action Equivalent to the Burnt River Mountain Alternative (Segment 3)	H	22,184	0	568	SP- .1 LP- 14.2	SP- 0 LP- 0	SP- 0 LP- 3	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 2	LP- 0	LP- 0	LP- 0	LP- 0	SP- 0 LP- 11.2	SP- 0 LP- 0
	M	0	13,184	0	SP- .3 LP- 12	SP- 11.9 LP- 10.2 SMA-3.1	SP- 0 LP- 0	SP- 12.7 LP- 2	SP- 0 LP- 11.2 SMA-3.1	SP- 0 LP- 42.2 SMA-3.1	LP- 26.2	LP- 44.2	LP- 0	LP-29	SP- 0 LP- 15	SP- 0 LP- 0
	L	0	36,559	0	SP- 0 LP- 0	SP- .8 LP- 33	SP- .1 LP- 23.2	SP- 0 LP- 42.2 SMA-3.1	SP- 0 LP- 12	SP- 11.9 LP- 0	LP- 0	LP- 0	L 241	LP- 16	SP- .1 LP- 0	SP- 11.9 LP- 44.2 SMA-3.1
	N	0	0	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- .3 LP- 0	SP- 0 LP- 0	SP- .4 LP- 3	SP- .8 LP- 0	LP- 0	LP- 0	LP-0	LP- 3	SP- .3 LP- 0	SP- .8 LP- 0

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms											
					Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
Timber Canyon Alternative (Segment 3)	H	67,115	0	2,098	SP- 0 LP- 28.2 SMA-9	SP-.7 LP- 10.8	SP- 0 LP-49.5	SP- 0 LP- 70.1	SP- 0 LP- 8.7	SP- 0 LP- 45.6	LP- 22.5	LP- 27.2	LP-189	LP- 0	SP- 0 LP- 39	SP- 0 LP-12.2
	M	0	43,865	0	SP- 0 LP- 38.3	SP- 0 LP- 65.1	SP- 0 LP- 6.5 SMA-9	SP- 15.7 LP- 15 SMA-12.5	SP- 0 LP- 20 SMA-9	SP- 0 LP- 42.2 SMA-12.5	LP- 18.7	LP- 84.6	LP- 111	LP- 162	SP- 0 LP- 27.5 SMA-9	SP- 0 LP- 44.9
	L	0	109,736	0	SP- 0 LP- 0	SP- 17.1 LP- 34 SMA-3.5	SP- 0 LP- 10.5	SP- 0 LP- 24.8	SP- 0 LP- 13.5	SP- 15 LP- 24	LP- 20.1	LP- 0	LP- 55	LP- 162	SP- 0 LP- 0	SP- 15 LP- 27.8 SMA-9
	N	0	46,139	0	SP- 0 LP- 0	SP- 0 LP- 3	SP- 0 LP- 0	SP- 2.1 LP- 3	SP- 0 LP- 24.3	SP- 2.8 LP- 13.1	LP- 5.2	LP- 1.12	LP- 109	LP- 27	SP- 0 LP- 0	SP- 2.8 LP- 28 SMA-3.5
Section of the Proposed Action Equivalent to the Timber Canyon Alternative (Segment 3)	H	44,667	0	1,540	SP- 1 LP- 41.3	SP- 7.7 LP- 8.6	SP- 0 LP- 22.3	SP- 0 LP- 29.1	SP- 0 LP- 0	SP- 0 LP- 27.3	LP- 0	LP- 10	LP- 0	LP- 0	SP- 0 LP- 18.3	SP- 0 LP- 8.7
	M	76	14,4824	0	SP- 0 LP- 1	SP- 30.2 LP- 66.5 SMA-9.2	SP- 0 LP- 0	SP- 29.3 LP- 46 SMA-9.2	SP- 0 LP- 0	SP- 0 LP- 91.7	LP- 3	LP- 116.3	LP- 0	LP- 352	SP- 1 LP- 4	SP- 0 LP- 43.5
	L	0	140,206	0	SP- .4 LP- 0	SP- 3.9 LP- 56.1	SP- 1 LP- 20	SP- 14.5 LP- 56.1	SP- 0 LP- 12.1	SP- 15.1 LP- 3.1	LP- 36.7	LP- 3.1	LP- 56	LP- 61	SP- 0 LP- 20	SP- 37.9 LP- 10.9 SMA-9.2
	N	0	28,383	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- .5 LP- 0	SP- 1.4 LP- 30.2	SP- 31.2 LP- 1.8	LP- 2.6	LP- 1.8	LP- 70.5	LP- 5.5	SP- .4 LP- 0	SP- 8.4 LP- 13.1
Willow Creek Alternative (Segment 4)	H	25,627	0	801	SP-0 LP-0	SP-0.6 LP-1.7	SP-0 LP-3.0	SP-3.5 LP-1.7	SP-0 LP-0	SP-0 LP-23.0	LP-0	LP-36.0	LP-0	LP-0	SP-0 LP-0	SP-0 LP-0
	M	36	0	0	SP-0 LP-3.0	SP-0 LP-8.9	SP-0 LP-3.0	SP-0.3 LP-14.1 SMA-4.8	SP-0 LP-0	SP-3.5 LP-0 SMA-4	LP-0	LP-0	LP-0	LP-109	SP-0 LP-3.0	SP-0 LP-0
	L	0	98,866	0	SP-0 LP-3.0	SP-7.0 LP-27.1 SMA-4.8	SP-0 LP-0	SP-3.1 LP-21.9	SP-0 LP-3.0	SP-3.1 LP-14.7	LP-0	LP-0	LP-0	LP-176	SP-0.4 LP-3.0	SP-4.1 LP-27.7
	N	217	4,980	1	SP-0.4 LP-0	SP-0 LP-0	SP-0.4 LP-0	SP-0.7 LP-0	SP-0.4 LP-3.0	SP-1.0 LP-0 SMA-.8	LP-6.0	LP-1.7	LP-21	LP-27	SP-0.4 LP-0	SP-4.1 LP-10.0 SMA-4.8

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms													
					Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
Section of the Proposed Action Equivalent to the Willow Creek Alternative (Segment 4)	H	8,675	0	205	SP-0 LP-0	SP-1.3 LP-3.4	SP-0 LP-3.2	SP-5.5 LP-9.0	SP-0 LP-0	SP-0 LP-26.0	LP-0	LP-26.0	LP-0	LP-0	SP-0 LP-0	SP-0 LP-0
	M	27,067	23,157	672	SP-0 LP-3.0	SP-5.5 LP-0	SP-0 LP-0	SP-0 LP-3.4	SP-0 LP-0	SP-0 LP-0	LP-0	LP-0	LP-0	L13.0	SP-0 LP-3.0	SP-0 LP-0
	L	0	67,079	0	SP-0 LP-0.2	SP-0 LP-26	SP-0 LP-0	SP-0 L17	SP-0 LP-0	SP-0 LP-3.4	LP-0	LP-3.4	LP-0	LP-112.0	SP-0 LP-0.2	SP-5.5 LP-12.4
	N	6	21,673	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP-1.3 LP-0	SP-0 LP-3.2	SP-6.8 LP-0	LP-3.2	LP-0	LP-3.5	LP-0	SP-0 LP-0	SP-1.3 LP-17
Tub Mountain South Alternative (Segment 4)	H	29,044	0	1,098	SP- 1 LP- 23.1	SP- 0 LP- 7.9 SMA- 9	SP- 0 LP- 1	SP- 5.3 LP- 45.1	SP-.04 LP-0	SP- 0 LP- 37.3 SMA- 9	LP- 0	LP-37.3	LP- 0	LP- 0	SP- 0 LP-5.1	SP- 0 LP- 0 SMA-9
	M	0	0	0	SP- 0 LP- 0	SP- 13.3 LP- 33.1	SP- 0 LP- 0	SP- 4.1 LP- 3.7 SMA-27	SP- 0 LP-17	SP-0 LP- 0	LP- 17	LP- 12	LP- 0	LP- 132	SP- 0 LP-18	SP- 0 LP- 4.2 SMA- 18
	L	0	120,609	0	SP- 0 LP- 0	SP- 20.8 LP- 12 SMA- 18	SP- 0 LP- 17	SP- 21.7 LP- 4.2	SP-0 LP- 0	SP- 27.3 LP- 15.7	LP- 0	LP- 3.7	LP- 33	LP- 51	SP- 1 LP- 0	SP- 15.3 LP- 48.8
	N	335	3,356	1	SP-.04 LP- 0	SP- 0 LP- 0	SP- 1.04 LP- 0	SP- 3 LP- 0	SP- 1 LP- 6.1	SP- 3 LP- 0	LP- 6.1	LP- 0	LP- 21	LP- 6	SP- .04 LP- 0	SP- 12.9 LP- 0
Section of the Proposed Action Equivalent to the Tub Mountain South Alternative (Segment 4)	H	2,111	0	237	SP- 0 LP- 3	SP- .3 LP-13.5	SP- 0 LP- 6	SP- 5.5 LP- 12	SP- 0 LP- 0	SP- 0 LP- 31.5	LP- 0	LP- 31.5	LP- 0	LP- 0	SP- 0 LP- 0	SP- 0 LP- 0
	M	29,917	23,840	907	SP- 0 LP- 3	SP- 8.3 LP- 12	SP- 0 LP- 0	SP- 0 LP- 6	SP- 0 LP- 0	SP- 2.8 LP- 0	LP- 0	LP- 0	LP- 0	LP- 168	SP- 0 LP- 3	SP- 0 LP- 0
	L	0	77,442	0	SP- 0 LP- 0	SP- 0 LP- 12	SP- 0 LP- 0	SP- 2.8 L 19.5	SP- 0 LP- 0	SP- 0 LP- 6	LP- 0	LP- 6	LP-0	LP- 33	SP- 0 LP- 3	SP- 5.5 LP- 25.5
	N	25,123	25,123	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP-.3 LP- 0	SP- 0 LP- 6	SP- 8.3 LP- 0	LP- 6	LP- 0	LP- 14	LP- 0	SP- 0 LP- 0	SP- 3.1 LP-12
Double Mountain Alternative (Segment 5)	H	7,691	0	243	SP-0 LP-0	SP-0 LP-0	SP- 2.3 LP-0	SP- 0 LP-0	SP-0 LP-0	SP-0 LP-0	LP- 0	LP- 0	LP- 0	LP- 0	SP- 0 LP-0	SP- 0 LP-0
	M	0	0	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP- .5 LP-0	SP-0 LP-0	SP-0 LP-0	LP- 0	LP- 0	LP- 0	LP- 0	SP- 2.6 LP-0	SP- 2.2 LP-0
	L	0	0	0	SP- 2.6 LP-0	SP-3.7 LP-0	SP-0 LP-0	SP- 1.7 LP-0	SP-0 LP-0	SP-0 LP-0	LP- 0	LP- 0	LP- 0	LP- 0	SP- 0 LP-0	SP- 1.5 LP-0

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms: Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
	N	0	38,841	0	SP-0 LP-0	SP-0 LP-0	SP-0 LP-0	SP- 1.5 LP-0	SP- 2.6 LP-0	SP- 3.7 LP-0	LP- 0	LP- 0	LP- 12	LP- 20	SP- 0 LP-0	SP- 0 LP-0
Section of the Proposed Action Equivalent to the Double Mountain Alternative (Segment 5)	H	5,733	0	228	SP-0 LP- 0	SP- 0 LP- 0	SP- .5 LP- 0	SP- 0 L -0	SP- 0 LP- 0	SP- 0 LP- 0	LP- 0	LP- 2	LP- 0	LP- 2	SP- 0 LP- 0	SP- 0 LP- 0
	M	0	5,645	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 2	SP- 0 LP- 0	SP- 0 LP- 0	LP- 0	LP- 0	LP- 0	LP- 0	SP- .5 LP- 0	SP- 2.3 LP- 0
	L	0	31,941	0	SP- .5 LP- 0	SP- 6.6 LP- 2	SP- 0 LP- 0	SP- 2.3 L - 0	SP- 0 LP- 0	SP- 3.9 LP- 2	LP- 0	LP- 0	LP- 0	LP- 32	SP- 0 LP- 0	SP- 2.3 LP- 0
	N	0	5,647	0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 0 LP- 0	SP- 2.3 LP- 0	SP- .5 LP- 0	SP- .7 LP- 0	LP- 0	LP- 0	LP-4	LP- 5	SP- 0 LP- 0	SP- 0 LP- 2
Malheur S Alternative (Segment 5)	H	29,044	0	1,098	SP- 2.3 LP- 7 SMA-5.2	SP- 4.6 LP- 10.5 SMA-5.2	SP- 2.3 LP- 7	SP- 5.5 LP- 9	SP- 0 LP- 0	SP- 0 LP-9.5	LP- 0	LP- 0.5	LP-0	LP- 0	SP- 3.6 LP- 0	SP-1.5 LP- 0
	M	0	0	0	SP- 1.8 LP- .5	SP- 12.9 LP- 6	SP- 1.2 LP- .5 SMA-5.2	SP- 7.7 LP- 7.5 SMA- 6.6	SP- 0 LP-5.5 SMA-5.2	SP- 0 LP-9 SMA-5.2	LP- 5	LP- 6	LP- 0	LP- 154	SP- .6 LP- 7 SMA-5.2	SP- 5.9 LP-0
	L	0	120,609	0	SP- 0 LP- 0	SP- 9.2 LP- 2 SMA-6.6	SP- 0 LP- 0	SP- 13.5 LP- 2 SMA-5.2	SP- 0 LP-2	SP- 10.7 LP-0	LP- 2.5	LP- 3	LP- 46	LP-25	SP- 0 LP- 0	SP- 13.2 LP- 9 SMA-5.2
	N	335	3,356	1	SP- .1 LP- 0	SP- 0 LP- 0	SP- .7 LP- 0	SP- 0 LP- 0	SP- 4.2 LP-0	SP- 16.0 LP-0	LP- 0	LP- 46	LP-46	LP- 25	SP- 0 LP- .5	SP- 6.1 LP- 9.5 SMA-6.6
Malheur A Alternative (Segment 5)	H	28,456	0	849	SP- 3.2 LP-5 SMA-4.9	SP- .6 LP- 17.2 SMA-4.9	SP- 3.9 LP- 5.5	SP- 4.31 LP- 13	SP-0 LP-0	SP-0 LP-6.4	LP-0	LP- 5.4	LP-0	LP-0	SP- 5.1 LP-0 SMA-4.9	SP- 1.9 LP-0
	M	10,050	2,604	277	SP- 2.2 LP-0	SP- 17.5 LP-0 SMA-7.6	SP- 2.2 LP-0 SMA-4.9	SP- 6.6 LP-0 SMA-1.7	SP-0 LP-0 SMA-4.9	SP-0 LP- 12 SMA-4.9	LP- 4	LP- 13	LP-0	LP- 100	SP- .6 LP-5	SP-7 LP- 5
	L	0	50,899	0	SP- 1.2 LP-0	SP- 9.3 LP- 1	SP-0 LP-0	SP- 16.2 LP- 5.4	SP-0 LP-5	SP- 16 LP-0	LP- 1.5	LP-0	LP- 24	LP-32	SP- 1 LP-0	SP- 12.4 LP- 7 SMA- 10.8
	N	275	85,606	1	SP-0 LP- .5	SP-0 LP-0	SP- .6 LP-0	SP- .3 LP-0 SMA- 10.8	SP- 6.7 LP- .5	SP- 8.4 LP-0 SMA-1.7	LP-0	LP-0	LP-7.5	LP- 19	SP-0 LP- .5	SP-6.1 LP- 6.4 SMA-1.7

Alternatives (Segment Location)	Magnitude of Impact	Scenic Quality FG Acres	Scenic Quality MG Acres	Landscape Character FG Acres	Sensitive Viewing Platforms											
					Visibility Conditions (miles)		Angle of View (miles)		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship (miles)	
					FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
Section of the Proposed Action Equivalent to the Malheur S and Malheur A Alternatives (Segment 5)	H	19,601	0	756	SP- .6 LP- 6 SMA-5	SP-0 LP-15.8 SMA-5	SP- .9 LP-6	SP-0 LP- 12	SP-0 LP-0	SP-0 LP- 14.1	LP-0	LP- 17.9	LP-0	LP-86	SP-0 LP-4	SP-0 LP-0
	M	6,327	0	223	SP-0 LP-0	SP- 4.2 LP- 10.1	SP-0 LP-0 SMA-5	SP- 14.6 LP- 0 SMA-5	SP-0 LP-0 SMA-5	SP-0 LP-11.8 SMA-5	LP-0	LP-8	LP-0	LP- 4	SP- .9 LP- 2 SMA-5	SP- 7.6 LP- 4
	L	78	49,647	0	SP- .9 LP-0	SP- 14.6 LP-0	SP-0 LP-0	SP- 4.2 LP- 13.9	SP-0 LP- 4	SP-11.6 LP-0	LP- 4	LP-0	LP- 21	LP- 122	SP- .6 LP-0	SP-1.9 LP- 18.1 SMA-5
	N	265	81,646	2	SP-0 LP-0	SP-0 LP-0	SP- .6 LP-0	SP-0 LP-0	SP- 1.5 LP- 2	SP-7.2 LP-0	LP- 2	LP-0	LP- 28	LP-0	SP-0 LP-0	SP- 9.3 LP- 3.8

Table Abbreviations: SP = stationary platform; LP = linear platform; SMA=special management area; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green).

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Table 3-176. Scenic Quality Impacts by Visual Analysis Unit—Proposed Action including 138/69-kVRebuild Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas		Acres of Change
	FG	MG		FG	MG	
BA-002 Willow Creek	3,965	8,198	C (8.5)	C (7.5)*	C (7.5)*	12,163
BA-003 Longhorn	25,857	155,057	C (8.5)	C (7.0)*	C (7.5)*	180,914
BA-004 Butter Creek	2,324	8,722	C (8.5)	C (7.0)*	NC	2,324
BA-005 Matlock	4,331	14201	C (10.0)	NC	NC	0
BA-006 Coombs	1,969	34,045	C (10.0)	C (8.5)*	C (9.5)*	36,014
BA-007 McKay	2,180	11,149	C (9.5)	C (8.0)*	C (9.0)*	13,329
BA-008 Spring Hollow	2,356	14,055	C (9.5)	C (8.0)*	C (8.5)*	16,411
BA-009 Blue Mountains Rocky Ridge	10,011	35,181	B (16.0)	B (14.5)*	B (15.5)*	45,192
BA-011 Blue Mountains Forest	30,564	96,162	B (15.0)	B (13.5)*	NC	30,564
BA-012 Grand Ronde Valley	0	5,103	C (8.5)	NC	NC	0
BA-013 Wallowa Mountains	0	2,006	B (18.0)	NC	NC	0
BA-014 Blue and Wallowa Foothills	55,087	118,769	B (12.0)	C (10.5)*	C (11.0)*	173,856
BA-015 Baker Valley	2,724	49,185	C (9.5)	C (8.0)*	C (9.0)*	51,909
BA-016 Pyles Canyon and Thief Valley	440	5,859	B (16.5)	B (15.0)*	NC	440
BA-018 Grand Ronde River	867	3,391	A (21.5)	A (20.0)*	NC	867
BA-019 Lower Powder Valley	0	5,371	C (10.5)	NC	NC	0
BA-020 Bowen Valley	0	0	Data needed	NC	NC	0
BA-021 Virtue Flat	782	7,601	C (10.5)	C (9.0)*	C (9.5)*	8,383
BA-024 Sutton Creek	163	1,791	C (9.5)	NC	NC	0
BA-025 Juniper and Sugarloaf Mountains	7,331	54,554	B (17.5)	B (16.0)*	B (17.0)*	61,885
BA-026 Durkee Creek	1,060	5,492	C (10.5)	C (9.0)*	C (10.0)*	6,552
BA-027 Caribou Bar	5,697	5,193	C (11.0)	C (9.5)*	C (10.5)*	10,890
BA-028 Brownlee Reservoir	0	333	B (15.5)	NC	NC	0
BA-031 Phipps Creek	7	476	C (10.0)	NC	C (9.5)*	476
CE-002 Willow Creek	0	6,372	N/A	NC	N/A	N/A
CE-003 Longhorn	0	1,514	N/A	NC	N/A	N/A

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas		Acres of Change
	FG	MG		FG	MG	
FR-025 Juniper and Sugarloaf Mountains	0	109	N/A	NC	N/A	N/A
FR-028 Brownlee Reservoir	0	333	N/A	NC	N/A	N/A
FR-029 Snake River/Given Hot Springs	0	9,102	N/A	NC	N/A	N/A
FR-030 Hidden Valley	0	11,372	N/A	NC	NC	N/A
MA-007 Cow Valley Butte	0	201	B (12.0)	NC	NC	0
MA-009 Becker Creek	3,767	6,564	C (6.5)	C (5.5)*	C (6.0)*	10,331
MA-011 Crow Creek	485	1,015	B (13.0)	B (12.0)*	NC	485
MA-012 Gum Creek	14,883	21,744	C (9.5)	C (8.5)*	C (9.0)*	36,627
MA-013 Thorn Flat	0	334	C (9.5)	NC	NC	0
MA-015 Juniper Mountain	234	9,927	B (14.5)	B (13.5)*	NC	234
MA-016 Cow Valley	0	0	C (9.5)	NC	NC	0
MA-035 Little Poison	0	0	B (11.5)	NC	NC	0
MA-036 Swede Flat	0	0	B (11.5)	NC	NC	0
MA-038 Hope Butte	4,772	26,207	C (10.0)	C (9.0)*	C (9.5)*	30,979
MA-039 Treasure Valley	3,078	56,949	B (17.0)	B (15.5)*	B (16.5)*	60,027
MA-040 Moores Hollow	6,563	14,046	C (11.0)	C (10.0)*	NC	6,563
MA-041 Sourdough Basin	17,403	45,026	C (9.5)	C (8.0)*	NC	17,403
MA-044 Westfall/Harper Valley	0	2,440	B (12.0)	NC	NC	0
MA-058 Hoodoo Ridge	0	8,953	C (8.5)	NC	NC	0
MA-060 Owyhee Tunnel	3,495	10,028	B (11.5)	C (10.0)*	NC	3495
MA-074 Board Coral	0	696	C (10.5)	NC	NC	0
MA-075 North Alkali	6,429	12,910	C (8.5)	C (7.5)*	C (8.0)*	19,339
MA-077 Antelope Springs	2,983	5,997	C (10.5)	C (9.5)*	NC	2,983
MA-078 Succor Creek	227	293	A (19.0)	B (17.5)*	NC	227
MA-119 Danger Point	5,643	16,414	B (12.0)	C (10.5)*	B (11.5)*	22,057
MA-121 Big sage Flat	124	2,633	B (13.0)	NC	NC	0
MA-122 Owyhee River	187	1,020	B (17.5)	B (16.0)*	NC	187
OW-001 Owyhee Mountains	10,502	16,516	C (10.5)	C (9.5)*	C (10.0)*	27,018
OW-002 Sands Basin	0	0	C (7.5)	NC	NC	0
OW-005 Squaw Creek	11	2,259	C (10.5)	C (9.5)*	NC	11

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas		Acres of Change
	FG	MG		FG	MG	
OW-006 Willow Spring	11,159	18,204	C (6.0)	C (5.0)*	C (5.5)*	29,363
OW-007 Salmon Butte	11	2,259	A (19.5)	NC	NC	0
OW-008 Reynolds Creek	0	1,261	B (13.5)	NC	NC	0
OW-019 Treasure Valley	3862	43,683	B (13.5)	B (12.0)*	B (13.0)*	47,545
OW-020 Jump Creek	217	268	A (18.5)	B (17.5)**	NC	217
Subtotal change within scenic quality classification A						867
Subtotal change within scenic quality classification B						245,559
Subtotal change within scenic quality classification C						519,982
Subtotal change in scenic quality classification (from A to B)						444
Subtotal change in scenic quality classification (from B to C)						199,408
Total						967,260

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-177. Scenic Quality Impacts by Visual Analysis Unit—Segment 1-Horn Butte Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-002 Willow Creek	3,901	8,244	C (8.5)	C (7.0)*	C (7.5)*	12,145
BA-003 Longhorn	22,049	138,125	C (8.5)	C (7.0)*	C (7.5)*	160,174
BA-004 Butter Creek	0	36	C (8.5)	NC	NC	0
BA-006 Coombs	0	233	C (10.0)	NC	NC	0
CE-002 Willow Creek	0	6,261	N/A	N/A	N/A	N/A
CE-003 Longhorn	0	1,165	N/A	N/A	N/A	N/A
Subtotal change within scenic quality classification C						172,319
Total						172,319

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available, NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-178. Scenic Quality Impacts by Visual Analysis Unit—Segment 1-Longhorn Variation

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-001 Columbia River Valley	0	5046	C (11.0)	NC	NC	0
BA-003 Longhorn	17,491	129,224	C (8.5)	C (7.0)*	C (8.0)*	146,715
BA-004 Butter Creek	0	36	C (8.5)	NC	NC	0
BA-006 Coombs	0	233	C (10.0)	NC	NC	0
BR-001 Columbia River Valley	0	7,830	N/A	N/A	N/A	N/A
Subtotal change within scenic quality classification C						146,715
Total						146,715

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available, NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-179. Scenic Quality Impacts by Visual Analysis Unit—Segment 1-Longhorn Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-001 Columbia River Valley	0	4620	C (11.0)	NC	NC	0
BA-003 Longhorn	21,123	110,513	C (8.5)	C (7.0)*	C (8.0)*	131,636
BA-004 Butter Creek	0	57	C (8.5)	NC	C (8.0)**	57
BA-006 Coombs	0	151	C (10.0)	NC	NC	0
BR-001 Columbia River Valley	0	7299	N/A	N/A	N/A	N/A
Subtotal change within scenic quality classification C						131,693
Total						131,693

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available, NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-180. Scenic Quality Impacts by Visual Analysis Unit—Segment 1-Section of the Proposed Action Equivalent to the Horn Butte/Longhorn/Longhorn Variation

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-002 Willow Creek	3,847	8,317	C (8.5)	C (7.0)*	C (7.5)*	12,164
BA-003 Longhorn	22,133	150,305	C (8.5)	C (7.0)*	C (7.5)*	172,438
BA-004 Butter Creek	0	36	C (8.5)	NC	C (8.0)**	36
BA-006 Coombs	0	233	C (10.0)	NC	C (9.5)**	233
CE-002 Willow Creek	0	6,372	N/A	N/A	N/A	N/A
CE-003 Longhorn	0	1,514	N/A	N/A	N/A	N/A
Subtotal change within scenic quality classification C						184,871
Total						184,871

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available, NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-181. Scenic Quality Impacts by Visual Analysis Unit—Segment 2-Glass Hill Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-011 Blue Mountains Forest	9,218	37,323	B (15.0)	B (13.5)*	NC	9,218
BA-012 Grand Ronde Valley	0	0	C (8.5)	NC	NC	0
BA-014 Blue and Wallowa Foothills	0	0	B (12.0)	NC	NC	0
BA-018 Grand Ronde River	20	1,770	A (21.5)	A (20.5)**	NC	20
Subtotal change within scenic quality classification A						20
Subtotal change within scenic quality classification B						9,218
Total						9,238

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-182. Scenic Quality Impacts by Visual Analysis Unit—Segment 2-Section of the Proposed Action Equivalent to the Glass Hill Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-011 Blue Mountains Forest	6,714	38,151	B (15.0)	B (13.5)*	B (14.5)*	44,865
BA-012 Grand Ronde Valley	0	0	C (8.5)	NC	NC	0
BA-014 Blue and Wallowa Foothills	0	0	B (12.0)	NC	NC	0
BA-018 Grand Ronde River	17	1,912	A (21.5)	A (20.5)	NC	17
Subtotal change within scenic quality classification A						17
Subtotal change within scenic quality classification B						44,865
Total						44,882

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-183. Scenic Quality Impacts by Visual Analysis Unit—Segment 3-Flagstaff Alternative (including 230-kV Rebuild)

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	7,814	30,440	B (12.0)	C (10.5)*	NC	7,814
BA-015 Baker Valley	2,797	27,329	C (9.5)	C (8.0)*	NC	2,797
BA-016 Pyles Canyon and Thief Valley	0	0	B (16.5)	NC	NC	0
BA-019 Lower Powder Valley	0	0	C (10.5)	NC	NC	0
BA-020 Bowen Valley	0	1,021	C (10.0)	NC	NC	0
BA-021 Virtue Flat	0	45	C (10.5)	NC	NC	0
BA-024 Sutton Creek	1,656	1,933	C (9.5)	C (8.0)*	NC	1,656
BA-025 Juniper and Sugarloaf Mountains	0	3,483	B (17.5)	NC	NC	0
Subtotal change within scenic quality classification C						4,453
Subtotal change in scenic quality classification (from B to C)						7,814
Total						12,267

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-184. Scenic Quality Impacts by Visual Analysis Unit—Segment 3-Section of the Proposed Action Equivalent to the Flagstaff Alternative (including 230-kV Rebuild)

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FM	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	11,636	41,620	B (12.0)	C (10.5)*	C (11.0)*	53,256
BA-015 Baker Valley	982	25,173	C (9.5)	C (8.0)*	NC	982
BA-016 Pyles Canyon and Thief Valley	0	6	B (16.5)	NC	NC	0
BA-019 Lower Powder Valley	0	5371	C (10.5)	NC	NC	0
BA-020 Bowen Valley	0	0	C (10.0)	NC	NC	0
BA-021 Virtue Flat	781	7,604	C (10.5)	C (9.0)*	C (9.5)*	8,385
BA-024 Sutton Creek	139	1,798	C (9.5)	NC	NC	0
BA-025 Juniper and Sugarloaf Mountains	0	3,323	B (17.5)	NC	B (17.0)**	3,323
Subtotal change within scenic quality classification B						3,323
Subtotal change within scenic quality classification C						9,367
Subtotal change in scenic quality classification (from B to C)						53,256
Total						65,946

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-185. Scenic Quality Impacts by Visual Analysis Unit—Segment 3-Burnt River Mountain Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	7,061	14,612	B (12.0)	C (11.0)*	NC	7,061
BA-025 Juniper and Sugarloaf Mountains	5,558	30,842	B (17.5)	B (16.0)*	NC	5,558
BA-026 Durkee Creek	1,368	5,050	C (10.5)	C (9.0)*	C (10.0)	6,418
BA-027 Caribou Bar	1,772	2,197	C (11.0)	C (9.5)*	NC	1,772
Subtotal change within scenic quality classification B						5,558
Subtotal change within scenic quality classification C						8,190
Subtotal change in scenic quality classification (from B to C)						7,061
Total						20,809

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-186. Scenic Quality Impacts by Visual Analysis Unit—Segment 3-Section of the Proposed Action Equivalent to the Burnt River Mountain Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	7,969	13,184	B (12.0)	C (10.5)*	C (11.0)*	21,153
BA-025 Juniper and Sugarloaf Mountains	6,271	34,420	B (17.5)	B (16.0)*	B (17.0)*	40,691
BA-026 Durkee Creek	6,551	235	C (10.5)	C (9.0)*	C (10.0)*	6,786
BA-027 Caribou Bar	1,393	1,904	C (11.0)	C (9.5)*	C (10.5)*	3,297
Subtotal change within scenic quality classification B						40,691
Subtotal change within scenic quality classification C						10,083
Subtotal change in scenic quality classification (from B to C)						21,153
Total						71,927

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-187. Scenic Quality Impacts by Visual Analysis Unit—Segment 3-Timber Canyon Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-010 Eagle Creek	1,913	6017	A (22.0)	A (20.5)*	A (21.5)*	7,930
BA-013 Wallowa Mountains	20,951	50,924	B (18.0)	B (16.5)*	B (17.5)*	71,875
BA-014 Blue and Wallowa Foothills	11,421	52,795	B (12.0)	C (10.5)*	B (11.5)*	64,216
BA-015 Baker Valley	0	12,226	C (9.5)	NC	NC	0
BA-016 Pyles Canyon and Thief Valley	1,195	5,075	B (16.5)	B (15.0)*	B (15.5)*	6,270
BA-022 Eagle Valley	2,107	7,706	B (13.0)	B (11.5)*	B (12.0)*	9,813
BA-023 Eagle Valley Foothills	10,004	31,819	B (13.5)	B (12.0)*	NC	10,004
BA-025 Juniper and Sugarloaf Mountains	19,524	31,084	B (17.5)	B (16.0)*	B (16.5)*	50,608
BA-026 Durkee Creek	0	1,927	C (10.5)	NC	NC	0
BA-027 Caribou Bar	0	167	C (11.0)	NC	NC	0

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
FR-025 Juniper and Sugarloaf Mountains	0	0	N/A	N/A	N/A	N/A
Subtotal change within scenic quality classification A						7,930
Subtotal change within scenic quality classification B						201,365
Subtotal change in scenic quality classification (from B to C)						11,421
Total						220,716

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-188. Scenic Quality Impacts by Visual Analysis Unit—Segment 3-Section of the Proposed Action Equivalent to the Timber Canyon Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-013 Wallowa Mountains	0	870	B (18.0)	NC	NC	0
BA-014 Blue and Wallowa Foothills	35,301	78,809	B (12.0)	C (10.5)*	C (11.0)*	114,110
BA-015 Baker Valley	1,343	42,637	C (9.5)	C (8.0)*	C (9.0)*	43,980
BA-016 Pyles Canyon and Thief Valley	27	5,054	B (16.5)	B (15.5)**	NC	27
BA-019 Lower Powder Valley	0	5,371	C (10.5)	NC	NC	0
BA-020 Bowen Valley	0	0	C (10.0)	NC	NC	0
BA-021 Virtue Flat	781	7,598	C (10.5)	C (9.0)*	C (9.5)*	8,379
BA-024 Sutton Creek	137	1,816	C (9.5)	NC	NC	0
BA-025 Juniper and Sugarloaf Mountains	4,420	32,985	B (17.5)	B (16.0)*	B (17.0)*	37,405
BA-026 Durkee Creek	1,059	5,474	C (10.5)	C (9.0)*	C (10.0)*	6,533
BA-027 Caribou Bar	0	182	C (11.0)	NC	NC	0
Subtotal change within scenic quality classification B						37,432
Subtotal change within scenic quality classification C						58,892
Subtotal change in scenic quality classification (from B to C)						114,110
Total						210,434

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-189. Scenic Quality Impacts by Visual Analysis Unit—Segment 4-Willow Creek Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue Wallowa Foothills	4,977	10,306	B (12.0)	C (10.5)*	B (11.5)*	15,283
BA-025 Juniper and Sugarloaf Mountains	0	3,472	B (17.5)	NC	B (17.0)**	3,472
BA-027 Caribou Bar	<1	2,978	C (11.0)	NC	C (10.5)**	2,978
BA-028 Brownlee Reservoir	182	404	B (15.5)	NC	NC	0
BA-031 Phipps Creek	0	0	C (10.0)	NC	NC	0
FR-025 Juniper and Sugarloaf Mountains	0	1,378	N/A	N/A	N/A	N/A
FR-028 Brownlee Reservoir	34	1,963	N/A	N/A	N/A	N/A
MA-009 Becker Creek	0	781	C (6.5)	NC	NC	0
MA-012 Gum Creek	36	6,392	C (9.5)	C (8.5)**	C (9.0)**	6,428
MA-015 Juniper Mountain	0	2,598	B (14.5)	NC	B (14.0)**	2,598
MA-038 Hope Butte	8,208	16,081	C (10.0)	C (8.5)*	C (9.5)*	24,289
MA-039 Treasure Valley	3,074	19,820	B (17.0)	B (15.5)*	B (16.5)*	22,894
MA-040 Moores Hollow	9,368	37,219	C (11.0)	C (9.5)*	C (10.5)*	46,587
MA-119 Danger Point	0	454	B (12.0)	NC	NC	0
Subtotal change within scenic quality classification B						28,964
Subtotal change within scenic quality classification C						80,282
Subtotal change in scenic quality classification (from B to C)						15,283
Total						124,529

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-190. Scenic Quality Impacts by Visual Analysis Unit—Segment 4-Section of the Proposed Action Equivalent to the Willow Creek Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	7,725	23,157	B (12.0)	C (10.5)*	B (11.0)*	30,882
BA-025 Juniper and Sugarloaf Mountains	0	3,120	B (17.5)	NC	B (17.0)**	3,120
BA-027 Caribou Bar	95	2,733	C (11.0)	C (10.0)**	C (10.5)**	2,828
BA-028 Brownlee Reservoir	0	187	B (15.5)	NC	B (15.0)**	187
BA-031 Phipps Creek	6	477	C (10.0)	NC	C (9.5)**	477
FR-025 Juniper and Sugarloaf Mountains	0	96	N/A	NC	N/A	N/A
FR-028 Brownlee Reservoir	0	255	N/A	NC	N/A	N/A
MA-007 Cow Valley Butte	0	201	B (12.0)	NC	NC	0
MA-009 Becker Creek	3,752	6,580	C (6.5)	C (5.5)*	C (6.0)*	10,332
MA-011 Crow Creek	475	1,025	B (13.0)	B (12.0)*	NC	475
MA-012 Gum Creek	11,816	13,899	C (9.5)	C (8.5)*	C (9.0)*	25,715
MA-013 Thorn Flat	0	334	C (9.5)	NC	NC	0
MA-015 Juniper Mountain	227	5,969	B (14.5)	B (13.5)**	NC	227
MA-016 Cow Valley	0	0	C (9.5)	NC	NC	0
MA-035 Little Poison	0	0	B (11.5)	NC	NC	0
MA-036 Swede Flat	0	0	B (11.5)	NC	NC	0
MA-038 Hope Butte	4,243	19,866	C (10.0)	C (9.0)*	C (9.5)*	24,109
MA-039 Treasure Valley	950	19,866	B (17.0)	B (15.5)**	B (16.5)**	20,816
MA-040 Moores Hollow	6,459	14,144	C (11.0)	C (10.0)*	NC	6,459
MA-119 Danger Point	0	0	B (12.0)	NC	NC	0
Subtotal change within scenic quality classification B						24,825
Subtotal change within scenic quality classification C						69,920
Subtotal change in scenic quality classification (from B to C)						30,882
Total						125,627

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-191. Scenic Quality Impacts by Visual Analysis Unit—Segment 4-Tub Mountain South Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	3,410	9,784	B (12.0)	C (10.5)*	B (11.5)*	13,194
BA-025 Juniper and Sugarloaf Mountains	0	3,466	B (17.5)	NC	B (17.0)**	3,466
BA-027 Caribou Bar	919	2,760	C (11.0)	C (9.5)*	C (10.5)*	3,679
BA-028 Brownlee Reservoir	197	674	B (15.5)	NC	B (15.0)**	674
FR-025 Juniper and Sugarloaf Mountains	0	3711	N/A	NC	N/A	N/A
FR-028 Brownlee Reservoir	138	3904	N/A	NC	N/A	N/A
MA-012 Gum Creek	1,642	6,992	C (9.5)	C (8.0)*	C (9.0)*	8,634
MA-015 Juniper Mountain	0	3,356	B (14.5)	NC	NC	0
MA-036 Swede Flat	0	0	B (11.5)	NC	NC	0
MA-038 Hope Butte	6,206	13,581	C (10.0)	C (8.5)*	C (9.5)*	19,787
MA-039 Treasure Valley	3,575	21,040	B (17.0)	B (15.5)*	B (16.5)*	24,615
MA-040 Moores Hollow	10,025	39,810	C (11.0)	C (9.5)*	C (10.5)*	49,835
MA-119 Danger Point	0	7,301	B (12.0)	NC	B (11.5)**	7,301
MA-120 Alkali Flats	3,267	7,586	C (8.0)	C (6.5)*	C (7.5)*	10,853
Subtotal change within scenic quality classification B						45,840
Subtotal change within scenic quality classification C						92,788
Subtotal change in scenic quality classification (from B to C)						3,410
Total						142,038

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-192. Scenic Quality Impacts by Visual Analysis Unit—Segment 4-Section of the Proposed Action Equivalent to the Tub Mountain South Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
BA-014 Blue and Wallowa Foothills	8,040	23,840	B (12.0)	C (10.5)*	C (11.0)*	31,880
BA-025 Juniper and Sugarloaf Mountains	0	3,379	B (17.5)	NC	B (17.0)*	3,379
BA-027 Caribou Bar	492	3,561	C (11.0)	C (10.0)*	C (10.5)*	4,053
BA-028 Brownlee Reservoir	0	196	B (15.5)	NC	NC	0
BA-031 Phipps Creek	6	478	C (10.0)	NC	C (9.5)**	478
FR-025 Juniper and Sugarloaf Mountains	0	114	N/A	NC	N/A	N/A
FR-028 Brownlee Reservoir	0	333	N/A	NC	N/A	N/A
MA-007 Cow Valley Butte	0	201	B (12.0)	NC	NC	0
MA-009 Becker Creek	3,741	6,590	C (6.5)	C (5.5)*	C (6.0)*	10,331
MA-011 Crow Creek	481	1,019	B(13.0)	B (12.0)*	NC	481
MA-012 Gum Creek	13,696	19,849	C (9.5)	C (8.5)*	C (9.0)*	33,545
MA-013 Thorn Flat	0	335	C (9.5)	NC	NC	0
MA-015 Juniper Mountain	226	9,027	B (14.5)	B (13.5)**	NC	226
MA-016 Cow Valley	0	0	C (9.5)	NC	NC	0
MA-035 Little Poison	0	0	B (11.5)	NC	NC	0
MA-036 Swede Flat	0	0	B (11.5)	NC	NC	0
MA-038 Hope Butte	4,680	22,355	C (10.0)	C (9.0)*	C (9.5)*	27,035
MA-039 Treasure Valley	971	16,455	B (17.0)	B (15.5)**	B (16.5)**	17,426
MA-040 Moores Hollow	6,601	14,345	C (11.0)	C (10.0)*	NC	6,601
MA-041 Sourdough Basin	0	0	C (9.5)	NC	NC	0
MA-119 Danger Point	0	4,328	B (12.0)	NC	B (11.5)**	4,328
Subtotal change within scenic quality classification B						25,840
Subtotal change within scenic quality classification C						82,043
Subtotal change in scenic quality classification (from B to C)						31,880
Total						132,863

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; N/A = not available; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-193. Scenic Quality Impacts by Visual Analysis Unit—Segment 5-Double Mountain Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
MA-039 Treasure Valley	0	2,430	B (17.0)	NC	NC	0
MA-041 Sourdough Basin	7,691	28,850	C (9.5)	C (8.0)*	NC	7,691
MA-044 Westfall/Harper Valley	0	0	B (12.0)	NC	NC	0
MA-058 Hoodoo Ridge	0	7,327	C (8.5)	NC	NC	0
MA-119 Danger Point	0	0	B (12.0)	NC	NC	0
MA-121 Big Sage Flat	0	234	B (13.0)	NC	NC	0
Subtotal change within scenic quality classification C						7,691
Total						7,691

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-194. Scenic Quality Impacts by Visual Analysis Unit—Segment 5-Section of the Proposed Action Equivalent to the Double Mountain Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
MA-039 Treasure Valley	0	5,645	B (17.0)	NC	NC	0
MA-041 Sourdough Basin	5,733	31,941	C (9.5)	C (8.0)*	C (9.0)*	37,674
MA-044 Westfall/Harper Valley	0	0	B (12.0)	NC	NC	0
MA-058 Hoodoo Ridge	0	4,935	C (8.5)	NC	NC	0
MA-119 Danger Point	0	0	B (12.0)	NC	NC	0
MA-121 Big Sage Flat	0	712	B (13.0)	NC	NC	0
Subtotal change within scenic quality classification C						37,674
Total						37,674

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-195. Scenic Quality Impacts by Visual Analysis Unit—Segment 5-Malheur S Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
MA-039 Treasure Valley	9	16,508	B (17.0)	NC	B (16.5)**	16,508
MA-041 Sourdough Basin	13,278	46,899	C (9.5)	C (8.0)*	C (8.5)*	60,177
MA-044 Westfall/Harper Valley	0	1,460	B (12.0)	NC	B (11.5)**	1,460
MA-058 Hoodoo Ridge	8,708	22,630	C (8.5)	C (7.0)*	C (8.0)*	31,338
MA-059 Grassy Mountain	0	2,773	A (19.0)	NC	NC	0
MA-060 Owyhee Tunnel	8,089	10,587	B (11.5)	C (10.5)*	C (11.0)*	18,676
MA-073 Iron Mountain	0	1,851	A (21.0)	NC	NC	0
MA-074 Board Coral	1,104	3,456	C (10.5)	C (9.0)*	C (10.0)*	4,560
MA-075 North Alkali	5,315	13,371	C (8.5)	C (7.0)*	C (8.0)*	18,686
MA-077 Antelope Springs	74	4,062	C (10.5)	NC	NC	0
MA-078 Succor Creek	153	295	A (19.0)	NC	A (18.5)**	295
MA-119 Danger Point	0	3,897	B (12.0)	NC	NC	0
MA-122 Owyhee River	2,940	1,972	B (17.5)	B (16.0)*	B (17.0)*	4,912
OW-001 Owyhee Mountains	0	392	C (10.5)	NC	NC	0
OW-019 Treasure Valley	0	5,312	B (13.5)	NC	NC	0
Subtotal change within scenic quality classification A						295
Subtotal change within scenic quality classification B						22,880
Subtotal change within scenic quality classification C						114,761
Subtotal change in scenic quality classification (from B to C)						18,676
Total						156,612

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 3-196. Scenic Quality Impacts by Visual Analysis Unit—Segment 5-Malheur A Alternative

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
MA-039 Treasure Valley	14	14,675	B (17.0)	NC	NC	0
MA-041 Sourdough Basin	13,171	46,283	C (9.5)	C (8.0)*	NC	13,171
MA-044 Westfall/Harper Valley	0	1,460	B (12.0)	NC	NC	0
MA-058 Hoodoo Ridge	8,702	22,627	C (8.5)	C (7.0)*	C (8.0)*	31,329
MA-059 Grassy Mountain	50	3,845	A (19.0)	NC	NC	0
MA-060 Owyhee Tunnel	7,590	10,019	B (11.5)	C (10.5)*	C (11.0)*	17,609
MA-062 Hurley	0	0	C (10.5)	NC	NC	0
MA-073 Iron Mountain	<1	3,506	A (21.0)	NC	NC	0
MA-074 Board Canal	1,275	4,265	C (10.5)	C (9.0)*	C (10.0)*	5,540
MA-075 North Alkali	5,308	13,988	C (8.5)	C (7.0)*	C (8.0)*	19,296
MA-077 Antelope Springs	65	5,349	C (10.5)	NC	NC	0
MA-078 Succor Creek	145	585	A (19.0)	NC	NC	0
MA-119 Danger Point	0	3,948	B (12.0)	NC	NC	0
MA-122 Owyhee River	2,460	2,604	B (17.5)	B (16.5)*	B (16.5)*	5,064
OW-001 Owyhee Mountains	0	401	C (10.5)	NC	NC	0
OW-019 Treasure Valley	0	5,554	B (13.5)	NC	NC	0
Subtotal change within scenic quality classification B						5,064
Subtotal change within scenic quality classification C						69,336
Subtotal change in scenic quality classification (from B to C)						17,609
Total						92,009

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU.

Table 3-197. Scenic Quality Impacts by Visual Analysis Unit—Segment 5-Section of the Proposed Action Equivalent to the Malheur S and A Alternatives

VAU Number/Name	Acres Visible within Analysis Area		Existing Scenic Quality Classification	Post-project Scenic Quality Classification within Visible Areas of Project		Acres of Change
	FG	MG		FG	MG	
MA-039 Treasure Valley	1,332	38,762	B (17.0)	B (15.5)**	B (16.5)**	40,094
MA-041 Sourdough Basin	14,622	44,406	C (9.5)	C (8.0)*	NC	14,622
MA-044 Westfall/Harper Valley	0	437	B (12.0)	NC	NC	0
MA-058 Hoodoo Ridge	0	7,818	C (8.5)	NC	NC	0
MA-060 Owyhee Tunnel	3,463	10,069	B (11.5)	C (10.0)*	NC	3,463
MA-074 Board Coral	0	703	C (10.5)	NC	NC	0
MA-075 North Alkali	6,327	10,885	C (8.5)	C (7.5)*	C (8.0)*	17,212
MA-077 Antelope Springs	78	4,538	C (10.5)	C (10.0)**	NC	78
MA-078 Succor Creek	142	224	A (19.0)	NC	NC	0
MA-119 Danger Point	0	2,408	B (12.0)	NC	NC	0
MA-121 Big Sage Flat	123	2,623	B (13.0)	NC	NC	0
MA-122 Owyhee River	184	1,024	B (17.5)	B (16.0)*	NC	184
OW-001 Owyhee Mountains	0	411	C (10.5)	NC	NC	0
OW-019 Treasure Valley	0	6,985	B (13.5)	NC	NC	0
Subtotal change within scenic quality classification B						40,278
Subtotal change within scenic quality classification C						31,912
Subtotal change in scenic quality classification (from B to C)						3,463
Total						75,653

Table Source: Logan Simpson Design.

Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NC = no change.

Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Compliance with Management Objectives

BLM Visual Resource Management System Classes

BLM has developed measurable standards for managing the visual resources of BLM lands. As previously noted, management classes with established objectives have been identified for the project area's visual resources as part of the RMP process. This analysis determined whether or not the Proposed Action and alternatives would be in compliance with the established objectives. Based on the respective VRM class, the stated management objectives were compared to the Proposed Action and alternatives regarding magnitude of change in visual character and scenic quality, viewer sensitivity, and visual contrast with and dominance in the existing landscape. Mapbook 1 of Appendix B-7 illustrates the location of the VRM classes within the B2H analysis area.

BLM Manual 8431-1 (BLM 1986) was used to evaluate the visual contrast created between the Proposed Action and alternatives and the existing landscape for those sensitive viewing platforms, referred to in the manual as key observation points (KOPs), that were identified to assess potential visual resource impacts to BLM-administered lands. The degree to which a management activity affects the visual quality of a landscape is largely dependent on the visual contrast created between a proposed project and the existing landscape. The contrast can be measured by comparing the project features or components with the major features in the landscape. The basic visual elements of form, line, color, and texture are used to make this comparison in addition to consideration of environmental factors incorporating the angle of observation and length of time the project is in view.

The contrast rating worksheets for each KOP assessing BLM-administered lands were completed in the field by BLM Field Office staff. The location of each of the KOP is provided in Mapbook 1 of Appendix B.7. Photorealistic simulations at selected locations within the analysis area relating to BLM lands were also completed. The determination of whether or not the Proposed Action and alternatives would be in compliance with the various BLM management objectives is provided in Table 3-198 through Table 3-210 by KOP. The description of the management objectives of each class are provided in Table 3-143. The level of contrast in VRM Class I can be no greater than weak, VRM Class II- no greater than low, VRM Class III - no greater than moderate, and for VRM Class IV- the contrast can be strong. Table 3-211 summarizes the acres of noncompliance by VRM class by alternative by BLM Field Office. Any area identified as not incompliance is subject to BLM RMP plan amendments, as appropriate; these areas are highlighted in Table 3-198 through Table 3-210 in red. See Plan Amendment Section 3.4.1.2 for additional details on the plan amendment process. Table 3-212 through Table 3-214 provide information related to BLM acres visible for scenic quality and sensitivity levels by BLM Field Office.

Proposed Action

The Proposed Action would create strong visual contrast that would not comply with current VRM classes at four KOPs. The Proposed Action would not comply with VRM Class III from the Oregon Trail Ruts Interpretive Site (5-33), NHOTIC Entrance SH 86 (5-60), and Virtue Flat OHV Area (5-84) in the Baker Field Office because primarily of strong contrast in terms of form. In addition, the Proposed Action would not comply with VRM Class II from the Lower Owyhee Interpretive Site in the Malheur Field Office (8-52) because of the strong contrast created by the project components in terms of form, line, color, and texture within the existing setting. The Proposed Action at each of the four KOPs would visually dominate the landscape.

Segment 1-Horn Butte Alternative, Longhorn Alternative, Longhorn Variation, and Equivalent Section of the Proposed Action

The Horn Butte and Longhorn alternatives, Longhorn Variation, and the equivalent sections of the Proposed Action would not physically disturb any BLM-administered lands in Segment 1. Therefore compliance with BLM VRM classes is not applicable to these alternatives in Segment 1.

Segment 2- Glass Hill Alternative and Equivalent Section of the Proposed Action

The Glass Hill Alternative and the equivalent section of the Proposed Action would not physically disturb any BLM-administered lands in Segment 2. Therefore compliance with BLM VRM classes is not applicable to these alternatives in Segment 2.

Segment 3- Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives and Equivalent Sections of the Proposed Action

There were no KOPs identified on the BLM-administered lands that would be crossed by the Flagstaff Alternative. Therefore compliance with BLM VRM Class IV was not evaluated for the project components associated with the Flagstaff Alternative. The section of the Proposed Action that would be equivalent to the Flagstaff Alternative would not comply with VRM Class III from NHOTIC Entrance (8-52) because of the strong contrast created by the project components in terms of form within the existing setting.

The Burnt River Mountain Alternative and the equivalent section of the Proposed Action would meet VRM Class III and Class IV objectives.

There were no KOPs identified on the BLM-administered lands that would be crossed by the Timber Canyon Alternative. Therefore compliance with BLM VRM Class II or Class III was not evaluated for the project components associated with the Timber Canyon Alternative. The section of the Proposed Action that would be equivalent to the Timber Canyon Alternative would create strong visual contrast that would not comply with current VRM Class III at three KOPs. This section of the Proposed Action would not comply with VRM Class III from the Oregon Trail Kiwanis Club Memorial (5-32), NHOTIC Entrance SH 86 (5-60), and Virtue Flat OHV Area (5-84) in the Baker Field Office because primarily of strong contrast in terms of form.

Segment 4-Willow Creek and Tub Mountain South Alternatives and Equivalent Sections of the Proposed Action

There were no KOPs identified on the BLM-administered lands that would be crossed by the Willow Creek Alternative or the section of the Proposed Action that is comparable to the Willow Creek Alternative. Therefore compliance with BLM VRM Class III was not evaluated for the project components associated with the Willow Creek Alternative or the comparable section of the Proposed Action.

The Tub Mountain South Alternative would create strong visual contrast that would not comply with current VRM Class III at three KOPs. This alternative would not comply with VRM Class III from the Alkali Springs Interpretive Site (8-1), Oregon Trail ACEC-Birch Creek (8-3), and Virtue Flat OHV Area (5-84) in the Malheur Field Office because primarily of strong contrast in terms of form. The section of the Proposed Action that is comparable to the Tub Mountain South Alternative would be in compliance with VRM Class IV at the Huntington Community KOP (5-5).

Segment 5-Double Mountain, Malheur S, and Malheur A Alternatives and Equivalent Sections of the Proposed Action

There were three KOPs identified on the BLM-administered lands that would be crossed by the Double Mountain Alternative and one KOP that the section of the Proposed Action that is comparable to the Double Mountain Alternative. Both alternatives would be in compliance with VRM Class IV from these KOPs.

The Malheur S Alternative would create strong visual contrast that would not comply with current VRM Class II at two KOPs. This alternative would not comply with VRM Class II from the Lower Owyhee River Site H2 (8-95) and Lower Owyhee River Site H1 (8-96) in the Malheur Field Office because primarily of strong contrast in terms of form. Similarly, the Malheur A Alternative would not comply with VRM II from the Lower Owyhee River Site H2 (8-95) and Lower Owyhee River Site H1 (8-96) as well as the Burnt Mountain Wilderness Characteristics Inventory Unit (8-84). The section of the Proposed Action that is comparable to the Malheur S and Malheur A alternatives would be in compliance with the VRM Class III and Class IV objectives.

Segment 6-Proposed Action

THE PROPOSED ACTION IS THE ONLY ACTION ALTERNATIVE LOCATED IN SEGMENT 6. COMPLIANCE WITH BLM VRM CLASSES WITHIN THE ANALYSIS AREA OF THE PROPOSED ACTION ARE PROVIDED IN TABLE 3-176.

Table 3-198. BLM Compliance by Key Observation Point—Proposed Action

Key Observation Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
12-13 China Ditch Road Rural Residential Area (Owyhee Field Office)	II	0		N/A
	III	0		N/A
	IV	104	Weak	Meets
12-18 Squaw Creek Research Natural Area - North (Owyhee Field Office)	II	0		N/A
	III	30	Weak	Meets
	IV	6	Weak	Meets
12-21 Wilson Creek Trailhead (Owyhee Field Office)	II	0		N/A
	III	0		N/A
	IV	102	Weak	Meets

Key Observation Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
12-22 Wilson Creek Wayside (Owyhee Field Office)	II III IV	0 0 103	 Moderate	N/A N/A Meets
12-23 Eastern Terminus - Wilson Cemetery (Owyhee Field Office)	II III IV	0 0 85	 Weak	N/A N/A Meets
12-26 Eastern Terminus – Spanish Charlie Basin Wilderness Characteristics Inventory Unit (Owyhee Field Office)	II III IV	0 0 0	 None	N/A N/A Meets
12-5 Hemingway Butte OHV Recreation Area (Owyhee Field Office)	II III IV	0 0 11	 Weak	N/A N/A Meets
12-8 Jump Creek Canyon ACEC (Owyhee Field Office)	II III IV	0 17 1	 Weak	N/A Meets Meets
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South) (Baker Field Office)	II III IV	0 23 62	 Moderate Moderate	N/A Meets Meets
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North) (Baker Field Office)	II III IV	0 5 37	 Moderate Moderate	N/A Meets Meets
5-25c Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Panorama Point) (Baker Field Office)	II III IV	0 0 0	 None 	N/A Meets N/A
5-25d Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Main Building) (Baker Field Office)	II III IV	0 0 1	 Moderate	N/A N/A Meets
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment) (Baker Field Office)	II III IV	0 24 63	 Moderate Moderate	N/A Meets Meets
5-26 Oregon Trail ACEC - Hill Creek Road (Baker Field Office)	II III IV	0 0 6	 Weak	N/A N/A Meets
5-32 Oregon Trail Kiwanis Club Memorial (Baker Field Office)	II III IV	0 13 0	 Moderate 	N/A Meets N/A
5-33 Oregon Trail Ruts Interpretive Site (Baker Field Office)	II III IV	0 20 37	 Strong Strong	N/A Does not meet Meets

Key Observation Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-34 Powder River ACEC (Baker Field Office)	II III IV	0 0 0	 None 	N/A Meets N/A
5-5 Huntington Community (Baker Field Office)	II III IV	0 0 10	 Weak	N/A N/A Meets
5-59 Lands w/Wilderness Characteristic Unit #OR-035-016 (Baker Field Office)	II III IV	0 0 22	 Weak	N/A N/A Weak
5-60 NHOTIC Entrance SH 86 (Baker Field Office)	II III IV	0 20 37	 Strong Strong	N/A Does not meet Meets
5-82 Durkee Community (Baker Field Office)	II III IV	0 35 57	 Moderate Moderate	N/A Meets Meets
5-84 Virtue Flat OHV Area (Baker Field Office)	II III IV	0 30 77	 Strong Strong	N/A Does not meet Meets
8-33 Double Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 0 68	 Strong	N/A N/A Meets
8-4 Board Corral Mountain Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 44	 Strong	N/A N/A Meets
8-52 Lower Owyhee Interpretive Site (Malheur Field Office)	II III IV	15 0 0	Strong 	Does not meet N/A N/A
8-75 Antelope Creek Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 5	 Weak	N/A N/A Meets
8-90 Double Mountain Wilderness Characteristics Inventory Unit- Rock Canyon Road (Malheur Field Office)	II III IV	0 7 11	 Moderate Moderate	N/A Meets Meets
Total Acres of Noncompliance	II III IV	15 70 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-199. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Flagstaff Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North)	II	0		N/A
	III	5	Moderate	Meets
(Baker Field Office)	IV	37	Moderate	Meets
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment)	II	0		N/A
	III	24	Moderate	Meets
(Baker Field Office)	IV	86	Moderate	Meets
5-60 NHOTIC Entrance SH 86	II	0		N/A
(Baker Field Office)	III	20	Strong	Does not meet
	IV	37	Strong	Meets
5-84 Virtue Flat OHV Area	II	0		N/A
(Baker Field Office)	III	0		N/A
	IV	107	Strong	Meets
Total Acres of Noncompliance	II	0		
	III	20		
	IV	0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-200. BLM Compliance by Key Observation Point—Burnt River Mountain Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-81 Burnt River VRM II Area	II	0		N/A
(Baker Field Office)	III	0	None	Meets
	IV	0		N/A
5-82 Durkee Community	II	0		N/A
(Baker Field Office)	III	9	Moderate	Meets
	IV	0		N/A
Total Acres of Noncompliance	II	0		
	III	0		
	IV	0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-201. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Burnt River Mountain Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-26 Oregon Trail ACEC - Hill Creek Road	II	0		N/A
(Baker Field Office)	III	0		N/A
	IV	6	Weak	Meets
5-82 Durkee Community	II	0		N/A
(Baker Field Office)	III	35	Moderate	Meets
	IV	57	Moderate	Meets
Total Acres of Noncompliance	II	0		
	III	0		
	IV	0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-202. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Timber Canyon Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South) (Baker Field Office)	II III IV	0 23 62	 Moderate Moderate	N/A Meets Meets
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North) (Baker Field Office)	II III IV	0 5 37	 Moderate Moderate	N/A Meets Meets
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment) (Baker Field Office)	II III IV	0 24 63	 Moderate Moderate	N/A Meets Meets
5-26 Oregon Trail ACEC - Hill Creek Road (Baker Field Office)	II III IV	0 0 6	 Weak	N/A N/A Meets
5-32 Oregon Trail Kiwanis Club Memorial (Baker Field Office)	II III IV	0 13 0	 Strong 	N/A Does not meet N/A
5-33 Oregon Trail Ruts Interpretive Site (Baker Field Office)	II III IV	0 20 37	 Moderate Moderate	N/A Meets Meets
5-60 NHOTIC Entrance SH 86 (Baker Field Office)	II III IV	0 20 37	 Strong Strong	N/A Does not meet Meets
5-82 Durkee Community (Baker Field Office)	II III IV	0 35 57	 Moderate Moderate	N/A Meets Meets
5-84 Virtue Flat OHV Area (Baker Field Office)	II III IV	0 30 77	 Strong Strong	N/A Does not meet N/A
Total Acres of Noncompliance	II III IV	0 63 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-203. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Willow Creek Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-5 Huntington Community (Baker Field Office)	II III IV	0 0 10	 Weak	N/A N/A Meets
Total Acres of Noncompliance	II III IV	0 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-204. BLM Compliance by Key Observation Point—Tub Mountain South Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-5 Huntington Community (Baker Field Office)	II III IV	0 0 22	 Weak	N/A N/A Meets
8-1 Alkali Springs Interpretive Site (Malheur Field Office)	II III IV	0 31 56	 Strong Strong	N/A Does not meet Meets
8-3 Oregon Trail ACEC Birch Creek (Malheur Field Office)	II III IV	0 62 25	 Strong Strong	N/A Does not meet Meets
8-34 South Alkali Sand Hills ACEC (Malheur Field Office)	II III IV	0 19 6	 Strong Strong	N/A Does not meet Meets
Total Acres of Noncompliance	II III IV	0 112 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-205. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Tub Mountain South Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-5 Huntington Community (Baker Field Office)	II III IV	0 0 9	 Weak	N/A N/A Meets
Total Acres of Noncompliance	II III IV	0 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-206. BLM Compliance by Key Observation Point—Double Mountain Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-33 Double Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 0 37	 Strong	N/A N/A Meets
8-88 Broken Rim Wilderness Characteristics Inventory Unit- Hoo Doo Road North (Malheur Field Office)	II III IV	0 0 45	 Moderate	N/A N/A Meets
8-90 Double Mountain Wilderness Characteristics Inventory Unit- Rock Canyon Road (Malheur Field Office)	II III IV	0 0 80	 Strong	N/A N/A Meets
Total Acres of Noncompliance	II III IV	0 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-207. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Double Mountain Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-33 Double Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 0 1	 Strong	N/A N/A Meets
8-90 Double Mountain Wilderness Characteristics Inventory Unit- Rock Canyon Road (Malheur Field Office)	II III IV	0 0 8	 Moderate	N/A N/A Meets
Total Acres of Noncompliance	II III IV	0 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-208. BLM Compliance by Key Observation Point—Malheur S Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-4 Board Corral Mountain Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 106	 Strong	N/A N/A Meets
8-74 McIntyre Ridge Wilderness Characteristics Inventory Unit- Succor Creek Road (Malheur Field Office)	II III IV	0 0 25	 Weak	N/A N/A Meets
8-84 Burnt Mountain Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 3	 Moderate	N/A N/A Meets
8-85 Sourdough Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 0 51	 Strong	N/A N/A Meets
8-88 Broken Rim Wilderness Characteristics Inventory Unit- Hoo Doo Road North (Malheur Field Office)	II III IV	0 0 211	 Strong	N/A N/A Meets
8-90 Double Mountain Wilderness Characteristics Inventory Unit - Rock Canyon Road (Malheur Field Office)	II III IV	0 24 22	 Weak Weak	N/A Meets Meets
8-91 Double Mountain Wilderness Characteristics Inventory Unit - Twin Springs Road (Malheur Field Office)	II III IV	0 7 44	 Moderate Moderate	N/A Meets Meets

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-93 Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek Middle (Malheur Field Office)	II III IV	0 0 7	 Moderate	N/A N/A Meets
8-95 Lower Owyhee River Site H2 (Malheur Field Office)	II III IV	1 0 8	Strong Strong	Does not meet N/A Meets
8-96 Lower Owyhee River Site H1 (Malheur Field Office)	II III IV	22 0 7	Strong Strong	Does not meet N/A Meets
Total Acres of Noncompliance	II III IV	23 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-209. BLM Compliance by Key Observation Point—Malheur A Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-21 McIntyre Ridge Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 3	 Weak	N/A N/A Meets
8-4 Board Corral Mountain Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 99	 Strong	N/A N/A Meets
8-74 McIntyre Ridge Wilderness Characteristics Inventory Unit- Succor Creek Road (Malheur Field Office)	II III IV	0 0 39	 Weak	N/A N/A Meets
8-84 Burnt Mountain Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	35 0 0	Strong	Does not meet N/A N/A
8-85 Sourdough Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 0 51	 Strong	N/A N/A Meets
8-88 Broken Rim Wilderness Characteristics Inventory Unit- Hoo Doo Road North (Malheur Field Office)	II III IV	0 0 211	 Strong	N/A N/A Meets
8-90 Double Mountain Wilderness Characteristics Inventory Unit- Rock Canyon Road (Malheur Field Office)	II III IV	0 24 22	 Moderate Moderate	N/A Meets Meets

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-91 Double Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 7 1	 Moderate Moderate	N/A Meets Meets
8-93 Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek Middle (Malheur Field Office)	II III IV	0 0 7	 Moderate	N/A N/A Meets
8-95 Lower Owyhee River Site H2 (Malheur Field Office)	II III IV	26 0 0	Strong	Does not meet N/A N/A
8-96 Lower Owyhee River Site H1 (Malheur Field Office)	II III IV	18 0 0	Strong	Does not meet N/A N/A
Total Acres of Noncompliance	II III IV	79 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-210. BLM Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Malheur S and A Alternatives

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
8-33 Double Mountain Wilderness Characteristics Inventory Unit- Twin Springs Road (Malheur Field Office)	II III IV	0 0 68	 None	N/A N/A Meets
8-4 Board Corral Mountain Wilderness Characteristics Inventory Unit (Malheur Field Office)	II III IV	0 0 44	 Moderate	N/A N/A Meets
8-52 Lower Owyhee Interpretive Site (Malheur Field Office)	II III IV	15 0 0	None	Meets N/A N/A
8-90 Double Mountain Wilderness Characteristics Inventory Unit- Rock Canyon Road (Malheur Field Office)	II III IV	0 7 11	 Moderate Moderate	N/A Meets Meets
Total Acres of Noncompliance	II III IV	0 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

1 **Table 3-211. Summary of Noncompliance with VRM Class Objectives by BLM Field Office**

BLM Field Office	Alternative	VRM Class II Noncompliance (acres)	VRM Class III Noncompliance (acres)
Baker	Proposed Action	0	70
	Section of the Proposed Action Equivalent to the Flagstaff Alternative	0	20
	Section of the Proposed Action Equivalent to the Timber Canyon Alternative	0	63
Malheur	Proposed Action	15	0
	Tub Mountain South	0	112
	Malheur S	23	0
	Malheur A	79	0

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3 **Table 3-212. Visibility of Project Components—BLM Baker Field Office**

Alternative	Sensitivity Level	Visible Acres from Alternative			Scenic Quality Class	Visible Acres from Alternative		
		FG	MG	Total		FG	MG	Total
Proposed Action	H	16,381	48,994	65,375	A	N/A	N/A	N/A
	M	1,607	4,577	6,184	B	5,825	20,043	25,868
	L	1	1	2	C	12,177	33,569	45,746
Horn Butte Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	N/A	14	14	B	N/A	N/A	N/A
	L	N/A	N/A	N/A	C	N/A	14	14
Longhorn Variation	H	52	110	162	A	N/A	N/A	N/A
	M	N/A	14	14	B	N/A	N/A	N/A
	L	N/A	N/A	N/A	C	52	124	176
Longhorn Alternative	H	162	1	163	A	N/A	N/A	N/A
	M	N/A	38	38	B	N/A	N/A	N/A
	L	N/A	N/A	N/A	C	161	39	200
Section of the Proposed Action Equivalent to the Longhorn, Horn Butte, Longhorn Variation	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	N/A	14	14	B	N/A	N/A	N/A
	L	N/A	N/A	N/A	C	N/A	14	14
Glass Hill Alternative	H	164	61	225	A	N/A	N/A	N/A
	M	N/A	5	5	B	N/A	N/A	N/A
	L	N/A	N/A	N/A	C	164	65	229
Section of the Proposed Action Equivalent to the	H	164	62	226	A	N/A	N/A	N/A
	M	N/A	5	5	B	N/A	N/A	N/A

Alternative	Sensitivity Level	Visible Acres from Alternative			Scenic Quality Class	Visible Acres from Alternative		
		FG	MG	Total		FG	MG	Total
Glass Hill Alternative	L	N/A	N/A	N/A	C	164	66	230
Flagstaff Alternative	H	633	5,233	5,866	A	N/A	N/A	N/A
	M	N/A	N/A	N/A	B	633	4,743	5,376
	L	N/A	N/A	N/A	C	N/A	491	491
Section of the Proposed Action Equivalent to the Flagstaff Alternative	H	4,807	16,666	21,473	A	N/A	N/A	N/A
	M	N/A	N/A	N/A	B	4,807	16,017	20,824
	L	N/A	N/A	N/A	C	N/A	649	649
Timber Canyon Alternative	H	6,014	27,604	33,618	A	N/A	N/A	N/A
	M	N/A	N/S	N/A	B	5,687	22,579	28,266
	L	N/A	N/A	N/A	C	327	5,026	5,353
Section of the Proposed Action Equivalent to the Timber Canyon Alternative	H	11,671	33,608	45,279	A	N/A	N/A	N/A
	M	N/A	N/A	N/A	B	5,758	19,035	24,793
	L	N/A	N/A	N/A	C	5,912	14,573	20,485
Burnt River Mountain Alternative	H	4,961	21,288	26,248	A	1576	3072	4648
	M	N/A	N/A	N/A	B	3385	18215	21600
	L	N/A	N/A	N/A	C	2,075	7,632	9,707
Section of the Proposed Action Equivalent to the Burnt River Mountain Alternative	H	5,743	18,352	24,095	A	N/A	N/A	N/A
	M	N/A	N/A	N/A	B	N/A	1,928	1,928
	L	N/A	N/A	N/A	C	5,743	16,425	22,168
Willow Creek Alternative	H	317	4,315	4,632	A	N/A	N/A	N/A
	M	3,025	3,346	6,371	B	N/A	20	20
	L	1	1	2	C	3,342	7,641	10,983
Section of the Proposed Action Equivalent to the Willow Creek Alternative	H	1,207	5,137	6,344	A	N/A	N/A	N/A
	M	1,580	4,359	5,939	B	N/A	20	20
	L	1	1	2	C	2,787	9,476	12,263
Tub Mountain South Alternative	H	879	3,284	4,163	A	N/A	N/A	N/A
	M	1,197	4,361	5,558	B	N/A	14	14
	L	N/A	1	1	C	2,075	7,631	9,706
Section of the Proposed Action Equivalent to the Tub Mountain South Alternative	H	1,366	5,357	6,723	A	N/A	N/A	N/A
	M	1,570	4,440	6,010	B	N/A	21	21
	L	1	1	2	C	2,936	9,786	12,722

Table Abbreviations: FG = foreground distance; MG = middleground distance; N/A = not applicable; N/S= not seen.

Table 3-213. Visibility of Project Components—BLM Malheur Field Office

Alternative	Sensitivity Level	Visible Acres from Alternative			Scenic Quality Class	Visible Acres from Alternative		
		FG	MG	Total		FG	MG	Total
Proposed Action	H	506	3,510	4,016	A	324	1,237	1,561
	M	11,761	23,604	35,365	B	7,715	26,569	34,284
	L	5,702	5,258	10,960	C	34,617	85,004	119,621
Willow Creek Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	3,074	16,285	19,359	B	33	2,857	2,890
	L	5,410	15,802	21,212	C	8,451	29,231	37,682
Section of the Proposed Action Equivalent to the Willow Creek Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	6,328	12,673	19,001	B	400	4,974	5,374
	L	6,922	12,582	19,504	C	12,850	20,281	33,131
Tub Mountain South Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	11,386	27,006	38,392	B	257	7,107	7,364
	L	5,549	15,019	20,568	C	16,673	34,918	51,591
Section of the Proposed Action Equivalent to the Tub Mountain South Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	8,278	23,202	31,480	B	399	10,425	10,824
	L	6,965	12,698	19,663	C	14,853	25,505	12,722
Double Mountain Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	5,259	22,103	27,362	B	N/A	206	206
	L	860	4,565	5,425	C	6,119	26,462	32,581
Section of the Proposed Action Equivalent to the Double Mountain Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	1,296	24,422	25,718	B	N/A	334	334
	L	768	3,620	4,388	C	2,064	27,708	29,772
Malheur A Alternative	H	4,060	9,241	13,301	A	1,881	7,838	9,719
	M	27,319	83,112	110,431	B	7,535	11,304	18,839
	L	4,794	8,141	12,935	C	26,757	81,352	108,109
Malheur S Alternative	H	4,482	8,120	12,602	A	2,399	6,001	8,400
	M	27,684	80,693	108,377	B	8,023	11,867	19,890
	L	4,848	8,382	13,230	C	26,591	79,327	105,918
Section of the Proposed Action Equivalent to the Malheur A and S Alternative	H	501	3,486	3,986	A	238	1,191	1,429
	M	13,796	51,694	65,490	B	3,580	11,052	14,632
	L	5,601	9,081	14,682	C	16,079	52,018	68,097

Table Abbreviations: FG = foreground distance; MG = middleground distance; N/A = not applicable.

Table 3-214. Visibility of Project Components—BLM Owyhee Field Office

Alternative	Sensitivity Level	Visible Acres from Alternative			Scenic Quality Class	Visible Acres from Alternative		
		FG	MG	Total		FG	MG	Total
Proposed Action	H	506	3,510	4,016	A	194	2,397	2,591
	M	11,761	23,604	35,365	B	101	1,805	1,907
	L	5,702	5,258	10,960	C	17,402	28,832	46,234
Malheur A Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	N/A	333	333	B	N/A	N/S	N/A
	L	N/A	N/A	N/A	C	N/A	333	333
Malheur S Alternative	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	N/A	331	331	B	N/A	N/S	N/A
	L	N/A	N/A	N/A	C	N/A	331	331
Section of the Proposed Action Equivalent to the Malheur A and S Alternatives	H	N/A	N/A	N/A	A	N/A	N/A	N/A
	M	N/A	342	342	B	N/A	N/S	N/A
	L	N/A	N/A	N/A	C	N/A	342	342

Table Abbreviations: FG = foreground distance; MG = middleground distance; N/A = not applicable; N/S= not seen.

USFS Scenery Management System and Visual Management System Objectives

On land managed by the USFS, adherence to the guiding LRMP was evaluated by comparing the definition of the VQO class with post-project conditions to assess whether the Proposed Action and alternatives would degrade the landscape below the level allowable in forest planning documents (Table 3-215 and Table 3-216). VQOs were used as a complete baseline for assessing project consistency because they represent the best available data. Photorealistic simulations at selected locations within the analysis area relating to USFS lands were completed to illustrate post-project conditions. Table 3-215 and Table 3-216 provide quantification of impacts on USFS lands associated with the alignments that would directly cross USFS lands. The Proposed Action would visually dominate the characteristic landscape in the Blue Mountain Forest VAU (BA-011) in the Wallowa-Whitman National Forest and would introduce project components that would not conform to common elements of form, line, color, or texture of the landscape within the analysis area in the foreground or middleground distance zone. Therefore the Proposed Action would not meet the VQOs of Retention, Partial Retention, or Modification in this VAU. Similarly, the Timber Canyon Alternative would not meet the VQOs of Retention, Partial Retention, or Modification in the Wallowa Mountains (BA-013) and Blue and Wallowa Mountains (BA-014) VAUs because the project components would dominate the characteristic landscape and not appear to conform with the surrounding landscape patterns and elements. These areas are highlighted in red on Table 3-215 and Table 3-216.

Table 3-217 summarizes the impacts on USFS lands, including the amount of disturbance to variety classes and sensitivity levels associated with the proposed project. Any area identified as not incompliance is subject to USFS LRMP plan amendments, as appropriates; these areas are highlighted in Table 3-215 through Table 3-217 in red. For both the Proposed Action and Timber Canyon

Alternative, the variety class most impacted would be Variety Class B. The Proposed Action would affect more area in Sensitivity Level 1 (high), while the Timber Canyon Alternative would affect more area in Sensitivity Level 3 (low).

Table 3-215. Compliance with USFS Visual Quality Objectives for Wallowa-Whitman National Forest—Proposed Action

VAU Number/Name	VQO	Compliance	VQO that Proposed Project Would Meet	Acres of Disturbance	% of Total within Analysis Area
BA-011 Blue Mountain Forest	Preservation	Not applicable	Preservation	None	None
	Retention	Does not meet	Maximum Modification	36	0.8
	Partial Retention	Does not meet	Maximum Modification	134	0.9
	Modification	Does not meet	Maximum Modification	14	0.04
	Maximum Modification	Not applicable	Maximum Modification	None	None
Total Acres of Noncompliance: Proposed Action	Preservation	Not applicable	Preservation	None	None
	Retention	Does not meet	Maximum Modification	36	0.8
	Partial Retention	Does not meet	Maximum Modification	134	0.9
	Modification	Does not meet	Maximum Modification	14	0.04
	Maximum Modification	Meets	Maximum Modification	None	None

Table Abbreviations: VQO = visual quality objective.

Table 3-216. Compliance with USFS Visual Quality Objectives for Wallowa-Whitman National Forest—Timber Canyon Alternative

VAU Number/Name	VQO	Compliance	VQO that Proposed Project Would Meet	Acres of Disturbance	% of Total within Analysis Area
BA-013 Wallowa Mountains	Preservation	Not applicable	Preservation	None	None
	Retention	Does not meet	Maximum Modification	13	0.1
	Partial Retention	Does not meet	Maximum Modification	109	0.4
	Modification	Does not meet	Maximum Modification	466	0.8
	Maximum Modification	Meets	Maximum Modification	128	3.0
BA-014 Blue and Wallowa Mountains	Preservation	Not applicable	Preservation	None	None
	Retention	Not applicable	Retention	None	None
	Partial Retention	Not applicable	Partial Retention	None	None
	Modification	Not applicable	Modification	None	None
	Maximum Modification	Meets	Maximum Modification	4	0.6
Total Acres of Noncompliance: Timber Canyon Alternative	Preservation	Not applicable	Preservation	None	None
	Retention	Does not meet	Modification	13	0.1
	Partial Retention	Does not meet	Modification	109	0.4
	Modification	Does not meet	Maximum Modification	466	0.8
	Maximum Modification	Meets	Maximum Modification	132	3.6

Table Abbreviations: VQO = visual quality objective.

1 **Table 3-217. Summary of Compliance with USFS Management Objectives for Wallowa-Whitman National Forest (Oregon)**

Alternative	VQO	VQO Compliance	VQO Noncompliance (acres)	Variety Class	Variety Class Disturbance (acres)	Variety Class Disturbance within Analysis Area (%)	Sensitivity Level	Sensitivity Level Disturbance (acres)	Sensitivity Level Disturbance within Analysis Area (%)
Proposed Action	Retention	Does not meet	36	A	None	None	1	153	0.8
	Partial Retention	Does not meet	134	B	183	0.4	2	17	0.6
	Modification	Does not meet	14	C	None	None	3	14	0.04
	Maximum Modification	Not applicable	None						
Timber Canyon Alternative	Retention	Does not meet	13	A	None	None	1	78	0.2
	Partial Retention	Does not meet	109	B	706	0.7	2	87	0.4
	Modification	Does not meet	466	C	13	0.2	3	555	1
	Maximum Modification	Meets	132						

2 *Table Abbreviations:* VQO = visual quality objective.

Scenic and Back Country Byways and National Historic Trails

Table 3-218 extracts the byways and trails summary impact results from the information provided in Table 3-153 through Table 3-174. The four factors shown in Table 3-218 quantify the magnitude of potential changes to the landscape and related effects to the casual viewers as a result of the construction and maintenance of the Proposed Action or alternatives. These factors help to determine if the project components would affect the byways or trail's intrinsic values and qualities as well as the user's experience. The thresholds of the relative magnitude of the direct impacts are provided in Table 3-152. The potential impacts that would occur to each of the byways and trails are summarized below in alphabetical order.

Blue Mountain Scenic Byway

The Proposed Action and the Horn Butte Alternative would be the only two alternatives visible from this relatively small portion of the Blue Mountain Scenic Byway, and they would have similar overall impacts to this linear platform. In both alternatives, the project components would be predominantly skylined in the middleground, creating a high level of impact in terms of visibility conditions. Approximately 90 percent of the Proposed Action or Horn Butte Alternative within the foreground would be visible along the approximately15.9 miles of this linear platform located in the analysis area. The Blue Mountain Scenic Byway would be crossed twice by both the Proposed Action and the Horn Butte Alternative. More of the Proposed Action would be seen within the foreground of the byway than the Horn Butte Alternative. Both the Proposed Action and Horn Butte Alternative would be visually prominent in the foreground and to a lesser degree in the middleground because of the presence of other similar scaled overhead transmission line and wind turbine features in the landscape.

The Blue Mountain Scenic Byway's intrinsic values would not be compromised by either alternative because the most scenic portion of the byway is through the Umatilla National Forest along the North Fork John Day and Camas rivers with spectacular view of the John Day and the Strawberry Mountain Wilderness Areas. The portion of the byway within the analysis area of the Proposed Action and Horn Butte Alternative represents approximately 11 percent of the byway and is characterized by greater cultural modifications as compared to the remaining portions of the byway.

Elkhorn Drive Scenic Byway

The Flagstaff Alternative would be the only alternative visible from the Elkhorn Drive Scenic Byway. Approximately 6 percent of the byway would occur within the middleground of the Flagstaff Alternative; it would not cross within the foreground of the alternative. Motorists would see the project components predominantly backdropped against the rolling terrain at approximately the same elevation level. The Elkhorn Drive Scenic Byway's intrinsic values would not be compromised by the Flagstaff Alternative because the project components would be seen by motorists as they enter Baker City, which have features in the landscape of similar size, scale, and texture when viewed approximately 3.4 miles away. The qualities associated with the byway – the historic gold mines with the spectacular views of the Elkhorn Mountains and John Day Wilderness Area in the Umatilla and Wallowa-Whitman National Forests- would not be impacted by the Flagstaff alternative.

Goodale's Cutoff Study Trail

The Proposed Action and four alternatives would be visible from the Goodale's Cutoff Study Trail. The project components associated with the Proposed Action and Flagstaff and Timber Canyon alternatives would be visually dominant within the foreground of the study trail, whereas the Willow Creek and Tub Mountain South alternatives would not be seen from the foreground. The Proposed Action and the Timber Canyon Alternative would cross the trail twice each. The Proposed Action and the Flagstaff, and Timber Canyon alternatives would lower the scenic quality of the landscape and impact the user's experience along the portion of the trail that would cross the foreground of these alternatives.

Within the foreground and middleground of the analysis areas, the Proposed Action would be seen from 14 percent of the Goodale's Cutoff Study Trail, 32 percent of Timber Canyon Alternative would be seen from the study trail, and 5 percent the Flagstaff, Tub Mountain South, and Willow Creek alternatives would be seen from the study trail in Oregon. The Proposed Action and alternatives would not compromise the landscape qualities associated with the 533 miles of the Goodale's Cutoff Study Trail overall, the 242.7 miles in Idaho, or 115.6 miles in Oregon, but would have direct, long-term adverse impacts to the visual setting and user experience for the portion of the trail within the foreground of the Proposed Action (4.9 miles), Flagstaff (1.0 mile), and Timber Canyon (6.6 miles) alternatives within the analysis area.

Grande Tour Route

The Grande Tour Route traverses within the analysis area of the Proposed Action and Glass Hill and Timber Canyon alternatives. The Glass Hill Alternative would not be visible from the route, and the route would be seen only from the middleground of the Proposed Action. However, the Timber Canyon Alternative would impact the intrinsic scenic quality of the landscape within the foreground of this alternative for approximately 25 percent of the 80-mile Grande Tour Route. The Timber Canyon Alternative would cross the byway twice and the project components would create a strong contrast in the setting when viewed by motorists. The Proposed Action would not affect the intrinsic quality and user experience of the travelers along the Grande Tour Route because of the limited visibility and negligible duration of view and contrast of the project components as viewed from the route.

Hells Canyon Scenic Byway

Within the analysis area of the Proposed Action and Flagstaff and Timber Canyon alternatives approximately 12.4, 8.6, and 19.6 miles, respectively, of the Hells Canyon Scenic Byway would occur. Each of these alternatives would cross the byway once. The Timber Canyon Alternative would be the most visible for the longest time of the alternatives under consideration and would create the strong contrast in the landscape in both the foreground and middleground of this alternative followed closely by the impacts that would be created by Proposed Action. However, motorists traveling the byway would see the Timber Canyon Alternative as they cross the farmlands and related rural development associated with the communities of New Bridge and Richland. The Proposed Action would cross the byway just to the east of Baker City. The motorists traveling along the All American Road would have predominately head-on middleground views of the Flagstaff Alternative.

The intrinsic scenic qualities associated with this All American Road, which includes views of the 10,000 foot peaks of the Wallowa Mountains and the 8,000 foot depths of Hells Canyon, and the user's experience while traveling the byway would not be altered by the Timber Canyon or Flagstaff alternatives or the Proposed Action.

Journey Through Time Scenic Byway

The Flagstaff Alternative would be the only alternative under consideration that would have an impact on the Journey Through Time Scenic Byway. Approximately 2 percent of the Journey Through Time Scenic Byway would occur within the middleground of the Flagstaff Alternative; the byway would not cross within the foreground of the alternative. Motorists would see the project components predominantly backdropped against the rolling terrain at approximately the same elevation level.

The Journey Through Time Scenic Byway's intrinsic values would not be compromised by the Flagstaff Alternative because the project components would be seen by motorists as they enter Baker City, which have features in the landscape of similar size, scale, and texture when viewed approximately 3.4 miles away. The qualities associated with the byway—the historic gold mining centers and the renowned views of the John Day River and the Cathedral Rock and Mascall Overlook near the John Day Fossil Beds National Monument—would not be impacted by this alternative.

Lewis & Clark Trail Scenic Byway, Washington

The Longhorn Alternative and Longhorn Variation would have identical overall low to moderate impacts to this relatively small portion (2.2 miles) of the Lewis & Clark Scenic Byway in Washington. In both alternatives, the project components would be predominantly skylined in the middleground as well as visible for the entire length of the byway within the respectively analysis areas. The portion of the byway where the Longhorn Alternative and Longhorn Variation would be visible represents approximately 0.3 percent of the total length of the designated route within the respective analysis areas. Therefore, the Longhorn Alternative and Longhorn Variation would not compromise the intrinsic qualities or user experience currently associated with the 570 miles of the Lewis & Clark Trail Scenic Byway in Washington.

Meek Cutoff Study Trail

The Malheur S and Malheur A alternatives would have substantially less impact on the scenic quality and landscape character of the Meek Cutoff Study Trail than the Proposed Action. No other alternatives would be seen from the trail. The Meek Cutoff Study Trail would only be present within the middleground of the Malheur S and Malheur A alternatives and the project components of these alternatives would be visible for approximately 44 and 50 percent, respectively, of the distance that the trail is within the middleground of the alternatives. These two alternatives would create a negligible contrast when viewed from this distance. The Malheur S and Malheur A alternatives would not compromise the landscape qualities associated with the 528 miles of the Meek Cutoff Study Trail overall or the 453.3 miles of the trail in Oregon

The project components would be visually dominant in the foreground of the Proposed Action and would lower the scenic quality of the landscape and impact the user's experience along the portion of the trail that crosses the foreground of the Proposed Action. The Proposed Action would cross the trail once. The Proposed Action would not compromise the landscape qualities associated with the 528 miles of the Meek Cutoff Study Trail overall or the 453.3 miles of the trail in Oregon, but it would have direct, long-term adverse impacts to the visual setting and user experience for the 2.8 miles of the trail that would be visible within the foreground of the Proposed Action.

Oregon National Historic Trail

The Proposed Action and all the alternatives with the exception of the Double Mountain Alternative would contain some portion of the Oregon National Historic Trail with their respective analysis areas. The Glass Hill, Malheur A, and Malheur S alternatives as well as Willow Creek Alternative would have substantially less impact on the scenic quality and landscape character as viewed from the Oregon National Historic Trail than the Proposed Action, Longhorn, Longhorn Variation, Horn Butte, Timber Canyon, Flagstaff, Burnt River Mountain, and Tub Mountain South alternatives. These eight alternatives would dominant the landscape in the foreground of this portion of the trail and would have direct, long-term adverse impacts to the visual setting and user experience for those using the Oregon National Historic Trail. The Proposed Action would cross the Oregon National Historic Trail 11 times, the Burnt River Mountain and Tub Mountain South alternatives would cross the trail two times, and the remainder of the five alternatives would cross the trail once.

The influence of the alternatives under consideration would have minimal impact when compared to the qualities of the entire 2,170-mile long congressionally designated trail, the 529.2 miles of trail in Idaho, or the 519.5 miles of trail in Oregon. The Proposed Action and the Longhorn, Longhorn Variation, Horn Butte, Timber Canyon, Flagstaff, Burnt River Mountain, and Tub Mountain South alternatives would have direct, long-term adverse impacts to the visual setting and user experience for the portions of the trail that would be visible within the foreground of the Proposed Action and these alternatives. The miles of the Oregon National Historic Trail that would visible within the foreground of the Proposed Action and the alternatives would be as follows: 23.9 miles within the foreground of the Proposed Action, 1.0 mile within the foreground of the Longhorn Alternative, 1.0 mile within the foreground of the Longhorn Variation, 2.1 miles within foreground of the Horn Butte Alternative, 1.1 miles within the foreground of the Timber Canyon Alternative, 1.2 miles within the foreground of the Flagstaff Alternative, 3.0 miles within the foreground of the Burnt River Mountain Alternative, and 3.2 miles within the foreground of the Tub Mountain South

Snake River Canyon Scenic Byway

The Proposed Action would be the only alternative under consideration that would have an impact on the Snake River Canyon Scenic Byway. The Proposed Action would not compromise the intrinsic qualities or user experience currently associated with the 153 miles of the byway. The Proposed Action would only be visible in the middleground and would be predominantly backdropped against terrain when viewed by motorists traveling the byway.

Snake River-Mormon Basin Back Country Byway

The Flagstaff, Burnt River Mountain, Willow Creek and Tub Mountain South alternatives would have substantially less impact on the scenic quality and landscape character as viewed from the Snake River-Mormon Basin Back Country Byway than the Proposed Action and Timber Canyon Alternative. The Proposed Action and Timber Canyon Alternative would dominant the landscape in the foreground of this portion of the byway. The Proposed Action would cross the byway twice and the Timber Canyon would cross the byway once.

The Flagstaff, Burnt River Mountain, Willow Creek and Tub Mountain South alternatives would not compromise the landscape qualities associated with the 150-mileSnake River-Mormon Basin Back Country Byway. The Proposed Action and Timber Canyon would not compromise the landscape qualities associated with the byway overall, but these alternatives would have direct, long-term adverse impacts to the visual setting and user experience for the portion of the byway visible from within the foreground of the Proposed Action(7.0 miles) and Timber Canyon Alternative (3.5 miles).

Western Heritage Historic Byway

The Proposed Action would be the only alternative under consideration that would have an impact on the Western Heritage Historic Byway. The Proposed Action would not compromise the intrinsic qualities or user experience currently associated with the 40-mile byway because it would only be visible in the middleground and predominantly backdropped against terrain when viewed by motorists traveling the byway.

Umatilla Indian Reservation

The Umatilla Indian Reservation is located in varied terrain with panoramic landscapes that includes broad agricultural plains as well as enclosed landscapes that include rounded mountainous terrain with incised drainages. Views of project components within the middleground of the project would be equally backdropped and skylined against rolling terrain and partially obstructed and continuous. Views of project components greater than 5 miles (background distance zone) from the Proposed Action would be consistently backdropped against rolling terrain and would be indiscernible when viewed from this distance.

There would be 28.2 miles of the project components within the Umatilla Indian Reservation analysis area. Based on bare earth GIS analysis, approximately 27 miles would be seen from the Reservation, which would represent 97 percent of the total miles of the project components seen from the Reservation. The most notable potential impacts would be when the Proposed Action is within the foreground of the Umatilla Indian Reservation. The project components would create a low to strong contrast in the landscape depending on the topography of the terrain and the presence or absence of forested vegetation.

Table 3-218. Summary of Impacts on Scenic Byways, Oregon National Historic Trail, and Study Trails for Each Alternative

Byway/Trail (total miles of linear platform)	Alternative (total miles of linear platform within analysis area)	Visibility Conditions Impact		Angle of View Impact		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship Impact	
		FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
Blue Mountain Scenic Byway (145 total miles)	Proposed Action including 138/69-kV Rebuild Alternative (15.9 miles)	M	H	M	M	H	N	M	L	N	L	M	L
	Horn Butte Alternative (15.9 miles)	M	H	M	M	H	N	L	L	N	N	M	L
	Section of Proposed Action Equivalent to the Horn Butte/Longhorn/Longhorn Variation (16.0 miles)	M	H	M	M	H	N	M	L	L	N	M	L
Elkhorn Scenic Byway (106 total miles)	Flagstaff Alternative including 230-kV Rebuild (6.0 miles)	None	L	None	L	None	M	None	M	N	N	None	N
Goodale's Cutoff Study Trail (533 total miles of Study Trail; 242.7 miles within Idaho, and 115.6 miles in Oregon)	Proposed Action including 138/69-kV Rebuild Alternative (23.6 miles)	H	H	H	H	N	H	L	M	N	L	H	L
	Timber Canyon Alternative (41.7 miles)	M	M	H	L	N	H	L	M	N	L	H	M
	Section of Proposed Action Equivalent to the Timber Canyon Alternative (23.6 miles)	H	M	H	H	N	H	L	N	N	N	H	M
	Flagstaff Alternative including 230-kV Rebuild (12.7 miles)	M	L	H	H	L	M	L	M	N	N	M	L
	Section of Proposed Action Equivalent to the Flagstaff Alternative including 230-kV Rebuild (23.6 miles)	H	H	H	H	L	M	L	M	L	M	H	M
	Willow Creek Alternative(4.1 miles)	None	L	None	M	None	H	None	H	None	M	None	N
	Tub Mountain South Alternative (6.5 miles)	None	H	None	L	None	H	None	H	None	N	None	M
Grande Tour Route (80 total miles)	Proposed Action including 138/69-kV Rebuild Alternative (27.2 miles)	None	M	None	L	None	N	None	L	None	L	None	N
	Glass Hill Alternative (11.6 miles)	None	None	None	None	None	None	None	None	None	None	None	None
	Section of Proposed Action Equivalent to the Glass Hill Alternative (11.7 miles)	None	None	None	None	None	None	None	None	None	None	None	None
	Timber Canyon Alternative (27.3 miles)	M	M	H	H	H	M	M	M	L	M	H	M
	Section of Proposed Action Equivalent to the Timber Canyon Alternative (8.9 miles)	None	L	None	L	None	L	None	L	None	M	None	N
Hells Canyon Scenic Byway (208 miles/All American Road)	Proposed Action including 138/69-kV Rebuild Alternative (12.4 miles)	H	H	H	H	N	H	L	M	L	M	H	M
	Section of Proposed Action Equivalent to the Glass Hill Alternative (0.2 miles)	None	None	None	None	None	None	None	None	None	None	None	None
	Timber Canyon Alternative (19.6 miles)	H	M	H	H	N	H	N	H	N	M	H	H
	Section of Proposed Action Equivalent to the Timber Canyon Alternative (12.2 miles)	H	H	H	H	N	H	L	M	L	M	H	M
	Flagstaff Alternative including 230-kV Rebuild (8.6 miles)	L	L	L	H	N	H	L	M	N	N	M	L
	Section of Proposed Action Equivalent to the Flagstaff Alternative including 230-kV Rebuild (12.2 miles)	H	H	H	H	N	H	L	M	N	N	H	M
Journey Through Time Scenic Byway (285 total miles)	Flagstaff Alternative including 230-kV Rebuild (4.4 miles)	None	L	None	L	None	N	None	L	None	N	None	N

Byway/Trail (total miles of linear platform)	**Alternative (total miles of linear platform within analysis area)**	**Visibility Conditions Impact**		**Angle of View Impact**		**Miles of Project Seen from Linear Platform (%)**		**Miles of Linear Platform with Views of Project (%)**		**Duration of View of Project along Linear Platform (%)**		**Scale and Spatial Relationship Impact**	
		FG	**MG**	**FG**	**MG**	**FG**	**MG**	**FG**	**MG**	**FG**	**MG**	**FG**	**MG**
Lewis and Clark Trail Scenic Byway (570 total miles in Washington; none in Oregon or Idaho)	Longhorn Alternative (1.8 miles)	None	H	None	L	None	H	None	H	None	M	None	N
	Longhorn Variation (2.2 miles)	None	H	None	L	None	H	None	H	None	M	None	N
Meek Cutoff Study Trail (528 total miles of trail; 115.6 miles in Oregon and none in Idaho)	Proposed Action including 138/69-kV Rebuild Alternative (13.1 miles)	H	H	H	H	N	H	L	M	N	L	H	M
	Section of Proposed Action Equivalent to the Tub Mountain South Alternative (0.9 mile)	None	None	None	None	None	None	None	None	None	None	None	None
	Malheur A Alternative (11.9 miles)	None	H	None	L	None	H	None	H	None	M	None	N
	Malheur S Alternative (11.9 miles)	None	H	None	L	None	H	None	H	None	M	None	N
	Section of Proposed Action Equivalent to the Malheur A and Malheur S Alternatives	None	H	None	L	None	M	None	H	None	L	None	N
Oregon National Historic Trail (2,170 total miles of trail; 519.5 in Oregon and 529.2 miles in Idaho)	Proposed Action including 138/69-kV Rebuild Alternative (194.4 miles)	H	M	L	L	N	H	N	H	L	M	H	L
	Longhorn Alternative(12.9 miles)	H	H	H	H	L	M	L	M	L	M	H	M
	Section of Proposed Action Equivalent to the Horn Butte/Longhorn/Longhorn Variation (36.7 miles)	H	H	H	H	N	H	N	H	N	M	H	M
	Longhorn Variation (15.6 miles)	H	H	H	H	N	H	N	H	N	H	H	L
	Horn Butte Alternative(36.8 miles)	H	H	H	L	N	H	N	H	N	M	H	M
	Glass Hill Alternative (20.9 miles)	None	L	None	L	None	H	None	H	None	L	None	N
	Section of Proposed Action Equivalent to the Glass Hill Alternative (21.0 miles)	N	L	L	L	N	H	N	H	N	L	N	L
	Timber Canyon Alternative (25.8 miles)	H	M	H	L	L	M	N	M	N	L	H	L
	Section of Proposed Action Equivalent to the Timber Canyon Alternative (57.6 miles)	H	M	H	M	L	M	L	M	N	M	H	M
	Flagstaff Alternative including 230kV Rebuild (20.1 miles)	H	L	H	H	N	N	N	H	N	M	H	N
	Section of Proposed Action Equivalent to the Flagstaff Alternative including 230-kV Rebuild (20.6 miles)	H	M	H	H	N	H	N	H	H	M	H	M
	Burnt River Mountain Alternative (31.3 miles)	H	L	H	L	N	H	L	M	N	M	H	L
	Section of Proposed Action Equivalent to the Burnt River Mountain Alternative (31.5 miles)	H	M	L	L	M	M	M	M	L	L	H	L
	Willow Creek Alternative (20.0 miles)	None	M	None	L	None	H	None	H	None	M	None	N
	Section of Proposed Action Equivalent to the Willow Creek Alternative (13.0 miles)	None	L	None	L	None	H	None	H	None	L	None	N
	Tub Mountain South Alternative (37.6 miles)	H	M	H	H	N	H	N	H	N	M	H	L
	Section of Proposed Action Equivalent to the Tub Mountain South Alternative (13.7 miles)	None	H	None	L	None	H	None	H	None	M	None	L
	Malheur S Alternative (3.4 miles)	None	H	None	L	None	H	None	H	None	M	None	N

Byway/Trail (total miles of linear platform)	Alternative (total miles of linear platform within analysis area)	Visibility Conditions Impact		Angle of View Impact		Miles of Project Seen from Linear Platform (%)		Miles of Linear Platform with Views of Project (%)		Duration of View of Project along Linear Platform (%)		Scale and Spatial Relationship Impact	
		FG	MG	FG	MG	FG	MG	FG	MG	FG	MG	FG	MG
	Malheur A Alternative (3.2 miles)	None	H	None	L	None	H	None	H	None	N	None	N
	Section of Proposed Action Equivalent to the Malheur A and Malheur S Alternatives (11.8 miles)	None	M	None	L	None	H	None	H	None	H	None	L
Snake River Canyon Scenic Byway (Idaho) (53 total miles)	Proposed Action including 138/69-kV Rebuild Alternative (15.5 miles)	None	L	None	L	None	M	None	H	None	H	None	L
Snake River-Mormon Basin Back Country Byway (150 total miles)	Proposed Action including 138/69-kV Rebuild Alternative (51.4 miles)	H	M	H	H	N	H	L	M	N	M	H	M
	Timber Canyon Alternative (24.4 miles)	H	M	M	H	N	H	L	M	N	M	H	M
	Section of Proposed Action Equivalent to the Timber Canyon Alternative (15.5 miles)	H	M	H	H	N	H	L	M	N	M	H	H
	Flagstaff Alternative including 230kV Rebuild (17.4 miles)	L	L	L	L	N	H	N	H	N	M	M	L
	Section of Proposed Action Equivalent to the Flagstaff Alternative including 230-kV Rebuild (15.7 miles)	H	L	H	H	N	H	L	H	N	M	H	M
	Burnt River Mountain Alternative (9.6 miles)	None	None	None	None	None	None	None	None	None	None	None	None
	Section of Proposed Action Equivalent to the Burnt River Mountain Alternative (8.0 miles)	None	None	None	None	None	None	None	None	None	None	None	None
	Willow Creek Alternative (11.9 miles)	None	H	None	H	None	L	None	N	None	N	None	L
	Section of Proposed Action Equivalent to the Willow Creek Alternative (12.2 miles)	None	H	None	M	None	L	None	L	None	L	None	L
	Tub Mountain South Alternative (13.8 miles)	None	H	None	M	None	L	None	L	None	L	None	L
	Section of Proposed Action Equivalent to the Tub Mountain South Alternative (13.8 miles)	None	H	None	M	None	L	None	L	None	L	None	L
Western Heritage Historic Byway (Idaho) (40 total miles)	Proposed Action including 138/69-kV Rebuild Alternative (2.4 miles)	None	L	None	L	None	H	None	H	None	H	None	N

Table Abbreviations: FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green).

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3.2.7.7 Mitigation Planning

In consultation with appropriate land-managing agencies' mitigation measures would be developed and incorporated into the final project design to minimize adverse effects to specific visual resources prior to the issuance of the Final EIS. This Draft EIS describes the ongoing mitigation planning work and the types of mitigation measures available to address residual impacts, but it does not quantify the mitigation that could be required once final project engineering and design is complete. Mitigation measures that could be implemented to reduce residual adverse effects to identified visual resources in the B2H Project area include modification of the project and associated elements such as:

- micrositing of towers, permanent access roads, and staging areas
- use of other tower types
- reduce tower height if possible to incorporate more backdrop features for towers spanning valley floor
- utilize natural terrain features for road placement to minimize views, i.e., don't just follow the powerline route if a meandering road will be less visible
- utilize re-contouring of disturbed lands to conform to pre-construction conditions where practical.
- minimize skylining by tower relocation.

While the BLM places a priority on mitigating impacts to an acceptable level onsite, there are times when on-site mitigation alone may not be sufficient. This is particularly the case with utility-scale development, which often involves a long-term commitment of resources over a relatively large area. In these instances, the BLM may consider requirements for regional mitigation of those unavoidable impacts that could exacerbate problematic regional trends. Unavoidable impacts to visual resources are those that cannot be adequately mitigated within the analysis area by avoidance and/or by the implementation of design features meant to minimize impacts that lead to a loss or reduction in inventoried visual values. It is also recognized that regional mitigation may not always be warranted for all unavoidable visual resource impacts. The BLM's interim policy, Draft Manual Section 1794, "Regional Mitigation" outlines the interim policy for taking a landscape-scale regional approach to mitigating project impacts to resources and values managed by the agency.

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3.2.8 Cultural Resources

3.2.8.1 Introduction

Considerations for Defining Cultural Resources

This section of the Draft EIS discusses the presence of cultural resources in the analysis area and the impacts that the Proposed Action and alternatives would have on those resources. The analysis area consists of the area of potential effects (APE), which is a geographic area or areas which may be directly or indirectly affected by the B2H Project. For cultural resources, effects could be the result of ground disturbances, visible or audible disturbances, or changes in public access, traffic patterns or land use. A distinction that should be understood at the outset of this presentation is the difference between the term "cultural resource" as it is employed in National Environmental Policy Act (NEPA) analysis and "historic property" as it is employed in Section 106 of the National Historic Preservation Act (NHPA) compliance. Historic properties are defined at 36 CFR Part 800.16(l)(1), the regulations implementing Section 106, as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior." Historic properties include properties of "traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria." The requirement that a historic property be evaluated as eligible for listing in the National Register of Historic Places (NRHP) makes the field of consideration much more restrictive than in NEPA analysis. For the B2H Project, as well as other actions requiring NEPA analysis, the BLM has broadened its consideration of impacts to encompass all cultural resources, regardless of NRHP eligibility. BLM Manual 8100.03.F (BLM 2004a) states that "[c]ultural resources need not be determined eligible for the National Register of Historic Places (as in the National Historic Preservation Act) to receive consideration under the National Environmental Policy Act." That said, where information on NRHP-listing or eligibility exists, it is issued to assist with assessments of significance and impact.

The classification of a "cultural resource" for purposes of the B2H EIS includes all buildings, sites, districts, structures, objects and landscapes that have been created by or are associated with humans and are considered to have historical or cultural value. The definition of what constitutes a "cultural resource" can vary between agencies and Indian tribes. For instance, some tribes prefer a definition that includes both the visual and spiritual elements of cultural practices. This may include cultural landscapes that possess natural resources and landforms important to tribes. These resources are commonly considered to be "traditional cultural properties" (TCPs). Hanes (1995) offers a broader definition of cultural resources as including "native species (plants and animals), inanimate materials, landforms, archaeological sites, ancestral grounds and other components of the physical environment…" This definition may more accurately approach the resources of concern to tribes, who consider the project area part of their traditional lands.

As defined in *National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties*, a TCP is "(a place) that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1992). TCPs, as described in *Bulletin 38*, do not necessarily have to reflect the "products" or "work" or human beings, but can represent the location where significant traditional events, activities, or cultural observances have taken place. Although the purpose of *Bulletin 38* is to establish criteria for evaluation of such places for NRHP listing, the significance of TCPs is taken by many groups to exceed the limited analytical framework provided by the NRHP. Furthermore, the knowledge required to properly identify and evaluate the significance of this particular class of cultural resources makes them distinctive from other archaeological and built environment resources. As such, identification of TCPs has followed a separate, parallel process to the one used to identify other cultural resources in the project area. This process involves conducting ethnographic studies commissioned by the tribes and shared with the agency for planning purposes. Although the scope and nature of these studies are characterized in this chapter, specific information on the finding of these studies is considered confidential and is not distributed as public information.

This section also presents mitigation measures to be used to avoid, minimize, or compensate for impacts to cultural resources. As described in this document, mitigation under NEPA does not limit or set the outcome of consultation required under Section 106 of the NHPA and implementing regulations found at 36 CFR Part 800.

3.2.8.2 Regulatory Framework

Federal Legislation Applicable to Cultural Resources in Analysis Area

Under NEPA analysis, cultural resources are considered a subset of the "human environment," and are thus subject to study as part of the "affected environment" (40 CFR 1508.4). Furthermore, impacts to cultural resources must be evaluated and disclosed.

In addition to the disclosure requirements under NEPA, Section 106 of the NHPA (16 U.S.C. 470) requires that the federal agency permitting the undertaking must "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register." Effect is defined in the implementing regulations of Section 106 (36 CFR 800.16(i)) as "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." For projects where it has been determined that the project will result in an "adverse effect" to historic properties, Section 106 compliance is considered satisfied with the execution of a memorandum of agreement (MOA) or programmatic agreement (PA), a legally binding document that describes the lead federal agencies' (in this case, the BLM) process of identifying and evaluating impacts on historic properties, and the plans for resolving adverse effects, in accordance with 36 CFR 800.14(b) and 36 CFR 800.16(t).

For complex, or phased undertakings, such as transmission line projects, where effects on historic properties are similar and repetitive or are multistate or regional in scope or when effects cannot be fully determined before approval of an undertaking, the execution of a PA is often necessary to articulate the alternative measures that will be followed to ensure compliance with Section 106 of the NHPA. The BLM, in consultation with the Washington, Oregon and Idaho State Historic Preservation

Offices (SHPOs), the Confederated Tribes of the Umatilla Indian Reservation Tribal Historic Preservation Office (THPO), other tribes, and other consulting parties, is developing appropriate measures to resolve adverse effects to historic properties. The phased compliance approach will proceed in accordance with the B2H Project PA (Appendix G).

Other Federal Cultural Resources Legislation

In addition to NHPA and 36 CFR Part 800, there are multiple laws, regulations, and executive orders and memoranda that protect cultural resources, especially those of concern to tribes. Legal authorities pertaining to cultural resources for the B2H Project are listed below.

- **American Antiquities Act of 1906** (16 U.S.C. 432–433) authorizes federal land-managing agencies to grant permits for examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity on federal land.
- **Religious Freedom Restoration Act** (RFRA; 42 U.S.C. 2000bb–41993), enacted in 1993 and amended in 2003, provides that without providing a compelling governmental interest, the United States government cannot substantially burden a person's exercise of religion, as provided for by the first amendment of the United States Constitution. RFRA is a significant law providing for protection of cultural resources, particularly traditional cultural places, particularly for tribes who visit or use these resources during religious practice.
- **American Indian Religious Freedom Act** (AIRFA; 42 U.S.C. 1996), enacted in 1978, requires federal agencies to protect and preserve the customs, ceremonies, and traditions of American Indian religions.
- **Archaeological Resources Protection Act** (ARPA; 16 U.S.C. 470aa–470ee), enacted in 1979, amended in 1988, provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement, or the attempt to do so, to any archaeological resource, regardless of NRHP eligibility, more than 100 years old on public lands or tribal lands. It further prohibits the sale, purchase, exchange, transportation, receipt, or offering of any archaeological resource obtained from public lands or tribal lands in violation of any provision, rule, regulation, ordinance, or permit under the act or under any federal, state or local law (BLM 2004a). It establishes permit requirements and civil and criminal penalties and increases the penalty for stealing or vandalizing to $100,000 and up to five years in prison.
- **Native American Graves Protection and Repatriation Act** (NAGPRA; 25 U.S.C. 3001–3002), enacted in 1990, establishes additional requirements for ownership and control of Native American cultural items, human remains, and associated funerary objects to Native Americans. It also establishes requirements for the treatment of Native American human remains and cultural objects found on federal land. This act further provides for the protection, inventory, and repatriation of Native American human remains, objects of cultural patrimony, sacred objects, unassociated funerary objects, and associated funerary objects.
- **National Trails System Act of 1968** (as amended 2009) instructs federal agencies, such as BLM and NPS, to develop management plans to identify and protect designated National Trails, including National Historic Trails (NHTs), and their associated sites and resources (BLM 1986, 2012; NPS 1998). It is the responsibility of the BLM to protect and interpret trail resources that are under their jurisdiction (BLM 1986, 2012). Implementing those responsibilities includes, but

is not limited to, the following tasks: regular monitoring of the resource, keeping the NPS informed, defining boundaries, erecting and maintaining trail markers, providing and maintaining facilities, issuing and enforcing regulations, maintaining the scenic/historic integrity, avoiding destruction of segments, and mitigating the unavoidable impacts (BLM 1986).

- **EO 11593, Protection and Enhancement of the Cultural Environment**, issued in 1971, directs federal land management agencies to administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; initiate measures necessary to direct their policies, plans, and programs in such a way that federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people; and, in consultation with the Advisory Council on Historic Preservation, institute procedures to ensure that federal plans and programs contribute to the preservation and enhancement of nonfederally owned sites, structures, and objects of historical, architectural, or archaeological significance.
- **EO 13007, Indian Sacred Sites**, issued in 1996, directs federal land-managing agencies to accommodate access to, and ceremonial use of, Native American sacred sites by native religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites.
- **EO 13175, Consultation and Coordination with Indian Tribal Governments**, issued in 2000, underscores the existing requirement for regular and meaningful government-to-government consultation between the federal government and tribal officials.

State Legislation Applicable to Cultural Resources

Oregon:

- Oregon Revised Statute (ORS) 358.905–955, Archaeological Sites and Objects
- ORS 390.235, Permits and Conditions for Excavation and Removal of Archaeological or Historic Material; Rules; Criminal Penalty and its associated Oregon Administrative Rules (OAR; 736–051-0080 to 0090)
- ORS Chapter 97.740 to 97.760, Indian Graves and Protected Objects

Idaho:

- Idaho Code Title 67, Chapter 41; Idaho Historical Society
- Idaho Code Title 27, Chapter 5, Sections 27-502 through 27-504: Protection of Graves
- Idaho Code Sections 9-337 through 9-350, the Idaho Public Records Law which stipulates the following records as exempt from disclosure:
    - Records, maps or other records identifying the location of archaeological or geophysical sites or endangered species, if not already known to the general public.
    - Archaeological and geologic records concerning exploratory drilling, logging, mining and other excavation, when such records are required to be filed by statute for the time provided by statute.

3.2.8.3 Issues Identified for Analysis

Project scoping with the public, tribes and agencies identified several specific key resources that could be impacted by the project. Those include:

- What will be the effects on places of cultural importance?
- What will the effects be on archaeological resources and historic properties?
- Can adverse effects on archaeological resources and historic properties be avoided?
- What will be the effects on first foods [foods traditionally gathered by Native American tribes]?

In addition, comments received during the scoping process indicated concerns about impacts to segments of the Oregon National Historic Trail, sites considered sacred to tribes associated with the Forced March of Paiute and Bannock peoples to Fort Simcoe on the Yakama Reservation, traditional Native American locations for gathering culturally significant plants, historic mining sites, and archaeological sites. Cultural resources specifically referenced in scoping are described below.

Oregon National Historic Trail

Designated an NHT in 1978, the Oregon NHT is an approximately 1,800 -mile-long network of trails, river crossings, and landmarks that were originally created by Native Americans and later refined by the early Euro-American explorers and fur trappers. Utilized by Euroamerican missionaries in the 1830s, in the 1840s the trail was intensively used by emigrants seeking to settle the fertile Willamette Valley. Many well-traveled segments of the trail have been converted to modern highways and railroad segments, including several segments of Interstate 84 (I-84) in Oregon and Idaho. Numerous markers have been erected along burial spots, emigrant camps, inscription spots, and areas containing visible wagon ruts within the states crossed by the trail. The Oregon Trail and/or associated trail features are present in all segments of the analysis area.

Characterization of segments of the NHT located within the analysis area for the B2H Project and analysis of impacts to the NHT are presented in this section as well as in Visual Resources (Section 3.2.7) and NHT (Section 3.2.9).

"Trail of Tears"

An estimated 550 to 650 Paiute and Bannock people were subjected to a forcible roundup to Fort Simcoe, in northwest Washington, during the winter of 1878-79.The precise location of their route is unknown. However, consultation with tribes indicates that portions of the trail are located within all segments of the analysis area. The relocation is considered by the Shoshone Paiute Tribes as a particularly significant event in their history, during which hundreds of men, women and infants died. Many bodies were left, unburied, along the Trail. The Trail is considered to be a spiritually significant property to the Shoshone Paiute Tribes, and project impacts continue to be evaluated through government-to-government consultation.

POISON CREEK STAGE STATION

The Poison Creek Stage Station is located in Segment 6 along the Proposed Action in Idaho. It contains a house, barn, two root cellars, a schoolhouse, a chicken coop, and an outhouse (NRHP form). This station was constructed in 1886 as a way station for the Jordan Valley-Caldwell stage line, and was listed in the NRHP in 1978.

3.2.8.4 METHODOLOGY

The area of potential effects for ground disturbances that could directly affect cultural resources in the project area is a 500-foot-wide corridor centered on the transmission line and towers. This corridor would accommodate the actual transmission line and towers. The APE has also been defined to accommodate a 200-foot-wide corridor along new and improved access roads and a 100-foot-wide corridor for existing unimproved access roads. The APE for staging areas, borrow areas, substations and other ancillary facilities is a 200-foot radius around the footprint of the facilities, and the APE for pulling and tensioning areas and geotechnical borings is a 250-foot radius around the site. The area of potential effects for indirect effects consists of a 10-mile-wide corridor centered on the project, adjusted to include the areas of land within this corridor from which the project would be visible. This expanse of corridor has also been established as the study area to examine any potential visual effects the project could have on sensitive cultural resources, such as traditional cultural properties, cultural landscapes, trails, standing architecture, or other cultural resources.

The cultural resources inventory conducted within the areas of potential effects for the B2H Project has been divided into two phases. Phase I has been completed for this Draft EIS, and Phase II will be completed for the Final EIS and will follow the provisions stipulated in the Section 106 project PA.

Phase I inventory consists of the following:

- A Class I records search, as set forth in the BLM Manual 8110 (BLM 2004b), consists of a compilation of existing information about known cultural resources assembled from a review of previous survey reports and previously recorded sites in the SHPO, THPO and agency databases and from the available literature. The parameters of the Class I records search included lands 2 miles on either side of centerline of the Proposed Action and all alternatives (four mile wide corridor.)
- A Class II sample pedestrian survey according to the BLM Manual 8100 guidance consists of "...statistically based surveys designed to characterize the probable density, diversity and distribution of cultural properties in an area and to answer appropriate research questions. A variety of methods may be used, singly or in combination, to improve statistical reliability, including quadrants selected randomly or systematically, transects, stratified samples, and phased approaches" (BLM 2004b). The parameters of the Class II survey included one mile sample segments of 250 feet on either side of centerline of the Proposed Action and all alternatives (500 foot corridor).

- A reconnaissance level survey (RLS) was completed within the expanded study area for indirect impacts. BLM Manual 8100 guidance defines an RLS as "…a focused or special-purpose information tool that is less systematic, less intensive, less complete, or otherwise does not meet Class III survey standards…an area surveyed only by reconnaissance methods cannot be considered to be "inventoried" and may be subject to resurvey for other purposes." The parameters of the RLS included above-ground resources located within five miles on either side of centerline of the Proposed Action and all alternatives.
- Ethnographic studies of the general project area to identify traditional cultural properties and characterize tribal concerns regarding cultural resources in the Project area.

Phase II will consist of the following:

- A Class III pedestrian survey will be conducted for the Agency Preferred Alternative as stipulated in the project PA. A Class III survey is a professionally conducted, thorough pedestrian survey that is intended to locate and record all cultural resources (BLM 2004b). The parameters of the Class III survey will include 100% of federal lands and accessible non-federal lands within the 500 foot corridor centered on the preferred alternative.
- An intensive level survey (ILS) will be conducted for aboveground resources identified in the RLS as requiring further study for assessment of indirect impacts.

The specific methods employed for collecting information on cultural resources during each of these phases are explained below.

Class I Records Search

To identify cultural resources within the study area, the IPC and their contractors conducted a Class I records search of a 4-mile-wide study corridor (two miles on either side of centerline) for the Proposed Action and each alternative. The records search for cultural resources on CTUIR lands consisted of two miles on both sides of the Proposed Action centerline only.

Data were gathered by official file records requests to the Oregon and Idaho SHPOs and the CTUIR THPO for sites and inventories located in any township, range, and section intersected by the 4-mile-wide study corridor. A portion of the study area encompasses the state of Washington, and the Washington SHPO and the USFW were also contacted to obtain records for that area. The records search focused on collecting information regarding previously recorded cultural resources within the study area, as well as identifying areas previously subject to pedestrian survey.

Additional data sources for the literature review included the U.S. Geological Survey (USGS) Mineral Resource Data System, GLO maps, and early state maps. USGS topographic maps and historic map sets were consulted to identify historic-era properties that may not have been previously recorded in the study area, as were state and local registers and the NRHP. Other sources consulted consist of the CTUIR Cultural Resources Protection Program, the Oregon Century Farms and Ranches Program, the Northwest Chapter and the Idaho Chapter of the Oregon-California Trails Association, the Oregon Historic Trails Advisory Council, and the Oregon Historic Sites Database. Sources consulted specific to

Idaho consist of the Archaeological Survey of Idaho database, Idaho Historic Sites Inventory database, and the Idaho Century Farms and Ranches Program.

Professional cultural resources inventories not only describe and document resources encountered, but provide recommendations of the resources' eligibility for listing in the NRHP. These recommendations are reviewed by the federal agency which, in consultation with SHPO and THPO, makes formal determinations of the resource's NRHP eligibility. These determinations, in turn, effect decision making on how the historic property will be managed by the agency. Information regarding NRHP eligibility for previously recorded cultural resources in Idaho reflect determinations made by the federal agency in consultation with the SHPO; it is unknown if the NRHP eligibility assessments provided for previously recorded resources in Oregon and Washington reflect recommendations or formal determinations reviewed by the SHPO.

Class II Fifteen Percent Sample Survey

Class II sample surveys of the Proposed Action and alternatives were conducted within a 500-foot-wide corridor (250 feet on both sides of centerline). Cultural resource investigations typically involve pedestrian field surveys that may locate new sites, structures, buildings, objects and districts and provide additional information on the types, densities, and precise locations of cultural resources within the area of analysis. The purpose of the 15 percent survey is to help to predict relative densities of cultural resources within the Proposed Action and alternatives to allow for an evaluation of potential effects to cultural resources for the Proposed Action and alternatives.

The sampling procedures employed random selection of sampling units. Inventory was conducted using 1-mile-long by 500-foot-wide survey blocks. The 1-mile length was used as an arbitrary measure, whereas the 500-foot width corresponds to the width of the comprehensive inventory that will be conducted of the direct APE of the Preferred Alternative. Following this procedure, all completed sample units will directly contribute to completion of the comprehensive inventory for the Agency Preferred Alternative.

Individual survey units were selected based on the following sampling strategy: First, for each proposed alternative and segment, 1-mile-long parcels were designated with a unique survey unit number (e.g., sampling units along a 50-mile-long segment were designated 1-50). A table of random numbers was then used to select specific units for inventory within an alternative. Representative units were selected to account for inventory of 15 percent of each alternative. To ensure adequate representation of each alternative, units were selected regardless of land ownership and included a mix of private, state, and federally managed lands. Because it was anticipated that access constraints would affect the ability to complete survey of units selected on private lands, and to ensure completion of a 15 percent sample, additional units were selected at random and held in reserve for use in case of denied access or other access issues. Following these procedures, information was collected to allow for assessment and comparison of potential cultural resources impact for the Proposed Action and alternatives.

In Oregon, the random sample covered 85 linear miles of the 554.37 miles of Proposed Action and alternatives (this number reflects current alternatives and those that have subsequently been dropped from consideration). In Idaho, the survey area covered 5 linear miles of the 23.8 miles of the Proposed Action.

It is important to note that NRHP eligibility data associated with sites recorded during Class II survey are recommendations of eligibility that are provided by the archaeological surveyors. The NRHP eligibility of these sites is not considered confirmed until the agency has made determinations of eligibility in consultation with the OR SHPO, ID SHPO, land-holding agencies, affected tribes, and CTUIR THPO, as appropriate.

Reconnaissance Level Survey

The analysis area for the RLS to assess potential indirect impacts, primarily visual, to cultural resources was defined as a 10-mile-wide corridor, 5 miles from centerline or to the visual horizon—whichever was closer—for the Proposed Action and alternatives. Identification of the APE for indirect effects employed a GIS bare-earth viewshed analysis to determine whether a previously identified cultural resource could have a view of the project area and consequently be subject to an indirect adverse effect. This type of viewshed analysis is based on a digital elevation model (DEM) and therefore reflects visible areas of the landscape based on existing landforms, without consideration of vegetation or built environment. Because availability of data regarding existing vegetation and built environment is limited, the bare-earth analysis makes the best use of available GIS DEM data and also provides a “worst case” scenario for visibility.

Once the APE was defined, a literature review was employed to identify significant built environment resources (generally consisting of NRHP listed, eligible, or potentially eligible buildings, structures, sites and districts as well as archaeological sites with significant above-ground components) that could be visually impacted by the project. Surveyors subsequently drove publicly accessible rights-of-way to relocate and record previously recorded resources and to identify any previously unrecorded resources within the RLS APE. Cultural resources that were recorded were 45 years old or older at the time of the RLS. Resources that were found to be listed, eligible, or potentially eligible for listing in the NRHP and potentially visually impacted, were recommended to move forward for further evaluation and impact analysis through an ILS, which will occur in Phase II of the cultural resources inventory for the B2H Project.

Ethnographic Studies

The CTUIR and the Shoshone Paiute Tribes have conducted ethnographic studies to identify areas of tribal interest and TCPs within the B2H Project area and to assist the BLM in meeting its obligations under NEPA, NRHP, EO 13175, AIRFA, ARPA, and numerous other laws and EOs. The BLM treats all information gathered during ethnographic research as confidential, and as such, specific locations or descriptions of resources are not disclosed in the EIS.

The method for conducting the ethnographic studies includes background research and literature review, ethnographic interviews to determine contemporary and ongoing uses of culturally significant areas or sites. The CTUIR also involve desktop analysis and field studies to identify “first foods” of significance to the Tribe.

Class III Survey

A Class III (intensive pedestrian) survey will be completed for the Proposed Action so that cultural resources that may be directly or indirectly impacted can be identified and assessed. The Class III survey will occur after comments on the Draft EIS have been received and prior to issuance of the Final EIS.

Any additional survey required to complete a 100 percent inventory of the Proposed Action, as well as any necessary subsurface inventory or evaluation efforts, will be conducted during Phase II in accordance with the project PA (Appendix G) drafted for the project. The project PA also provides for a process of intensive Class III pedestrian survey for any additional elements (e.g., roads, staging areas) that are added to the project after the Record of Decision.

Intensive Level Survey

An ILS will be conducted for built environment resources within the indirect area of impacts. The ILS will focus on those resources identified in the RLS as requiring further study for assessment of indirect impact. The results of the ILS will be reported in the Final EIS.

3.2.8.5 Cultural Context

The following overview is presented to introduce the reader to the diverse geography of the project area, and the pattern of human activity visible on the landscape. The overview provides a general presentation of prehistoric chronologies of the Columbia Plateau and Great Basin regions, through information gathered by previous archaeological research. It also presents information on the historic period development of the area in terms of the important socio-economic themes that have shaped the landscape (e.g., transportation, mining, timber and logging, agriculture, and stock raising).

It is important to note that the distinction made between “prehistoric” and “historic” resources is an artificial one that is based, for the most part, on the source of data that informs upon each time period. The concept of “prehistory” is a term used in the field of archaeology, which must characterize human society and cultural patterns through material comparisons. Determining what constitutes the “historic period” differs from region to region, as the term “historic” simply marks the time at which written records become available. The murkiness of the prehistory concept becomes particularly evident when dealing with the period of time many researchers identify as the “protohistoric.” This is a time when Euro-Americans encountered and documented many Native American groups; however, these groups did not keep written records themselves, and, therefore, protohistoric records are often biased or unreliable accounts.

Ethnography is the descriptive study of living cultures by anthropologists and, in the United States, is often used to characterize the social and economic organization of Native American people living in a region prior to the arrival of Euro-American individuals and groups. Many tribes, including several tribes being consulted on the B2H Project, have indicated a concern with the artificial division between history and prehistory, citing that it characterizes traditional lifeways as “ahistoric” and fails to recognize the continuity of cultural practices that tribes engage in as living communities. Although the overview presented here does adopt the distinction between prehistoric and historic resources, the authors of the

EIS have chosen to begin this discussion with an ethnographic summary of the traditional lands of Native American groups living in the project area at the time of Euro-American contact. It is hoped that the structure of this presentation will facilitate an appreciation that the archaeology present in the project area is a manifestation of deeply rooted Native American cultural traditions that continue to be practiced today. Contemporary concerns of Native American tribes have been communicated to the BLM through government to government consultation and are discussed in various sections of the EIS, including Earth Resources (Section 3.2.1), Vegetation Resources (Section 3.2.3), Wildlife Resources (Section 3.2.4.), Land Use, Agriculture, Recreation and Transportation (Section 3.2.6), Socioeconomic and Environmental Justice (Section 3.2.11), and Public Health and Safety (Section 3.2.12).

The ethnographic and archaeological overviews presented follow the convention of distinguishing cultural patterns by ecological zone, as established through the work of noted anthropologist Julian Steward (1938), whose work documenting Native American tribes of the Columbia Plateau and Great Basin is considered foundational in the field of anthropology. However, as Steward himself noted, the boundaries of these two zones were not fixed; the highly mobile groups in the Great Basin and Snake River Plain resulted in a complex web of interaction and relationships that challenged Euro-American's efforts to document discrete tribes. As such, early attempts to characterize ethnic boundaries by language, diet, territorial range and/or political affiliation in historical accounts are conflicting. The alienation of many tribes from their traditional lands and the establishment of reservations by the United States government in the late nineteenth century further complicates the use of the Plateau and Great Basin as a conceptual framework for assigning traditional use of these lands to one or more contemporary tribes.

ETHNOGRAPHIC OVERVIEW OF THE COLUMBIA PLATEAU

Ethnographic information on the Columbia Plateau has been summarized in a number of sources, including those by Ames et al. (1998), the CTUIR, Hanes (1995), Ruby and Brown (1972), Stern (1998), and Suphan (1974). In the Columbia Plateau region, the project traverses the traditional territories of the Western Columbia River Sahaptins; Umatilla, Cayuse, and Walla Walla tribes; and the Nez Perce Tribe (Figure 3-46). The ethnographic descriptions of these groups and their written history are summarized below.

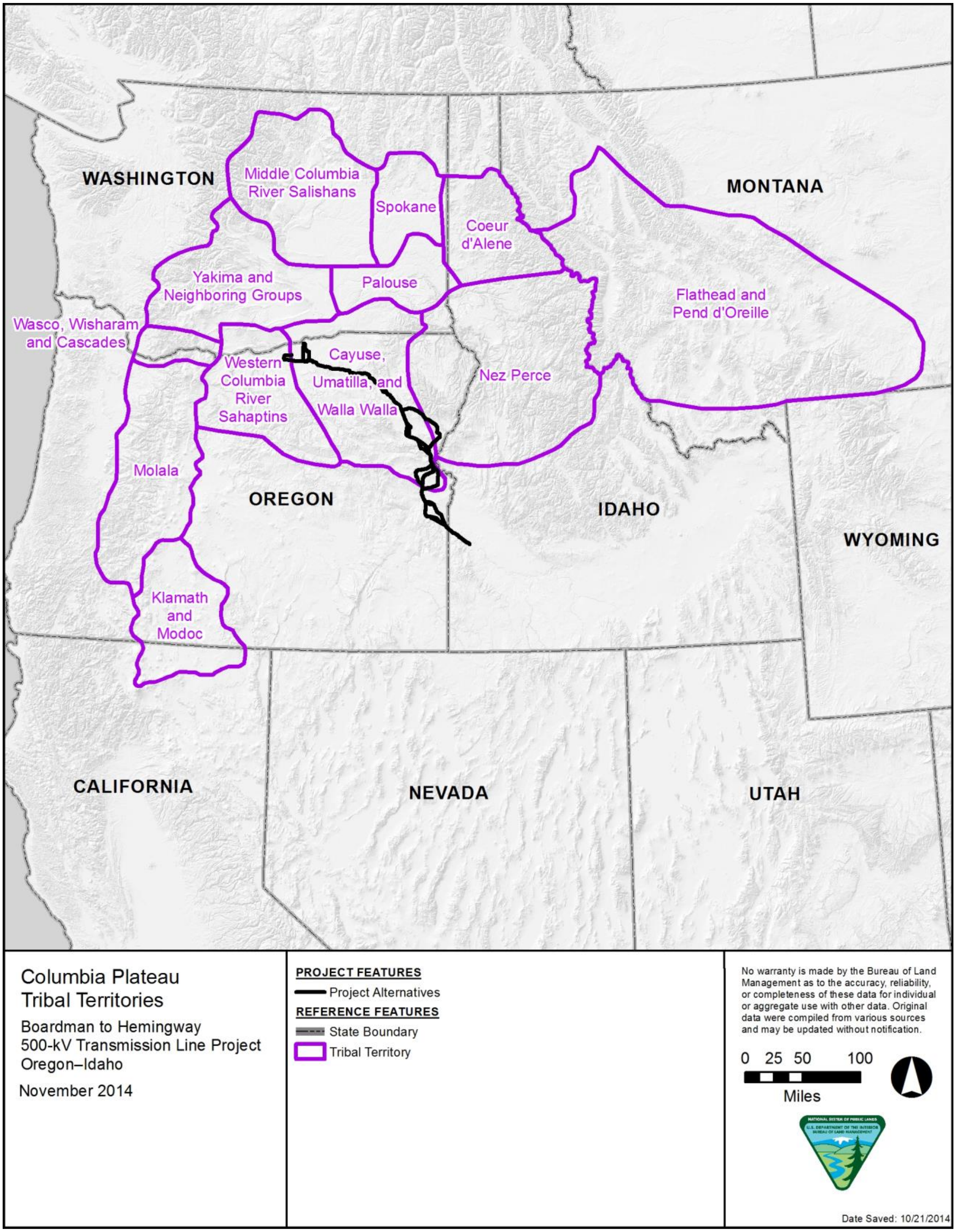

Figure 3-46. Diagrammatic Map of Traditional Tribal Territories of the Columbia Plateau (source: Walker 1998)

Western Columbia River Sahaptins

The village communities historically documented along the Columbia River and its tributaries from near The Dalles, Oregon, to Alder Creek, Washington, are characterized as comprising the Western Columbia River Sahaptins (Hunn 1990; Hunn and French 1998:378-379). These groups spoke the Columbia River dialect group of the Sahaptin language, as did the Umatilla, who resided to the east. The Yakama occupied territory to the north, whereas the Chinookan-speaking Wasco, Wishram, and Cascades resided to the west, though use of these areas overlapped (French and French 1998; Hunn 1990; Schuster 1998; Stern 1998).

Sahaptin villages consisted of politically autonomous groups. Village communities of Sahaptin-speakers were found along the Columbia River and its tributaries (Hunn and French 1998:378–379), though use of this area overlapped with neighboring groups, including the Nez Perce (cf. Hunn 1990; French and French 1998; Schuster 1998; Stern 1998). The traditional Sahaptin economy was based on the seasonal round; subsistence and settlement systems depended on the topography and availability of resources within an area. The Western Columbia River Sahaptins wintered in their villages at favorable fishing sites along the Columbia and its tributaries. Families spent much of the spring, summer, and fall in seasonal camps procuring food. This ecological adaptation provided an abundant resource base until smallpox epidemics of the late 1700s and subsequent arrival of Euro-American settlers in the mid-1800s severely disrupted traditional cultural patterns. Sahaptin-speaking communities were further fractured in the reservation era with the signing of the 1855 Middle Oregon Treaty and removal of the Wasco, Tenino and Northern Paiute peoples to the Warm Springs Reservation. Treaty boundaries arbitrarily divided traditional homelands, and social networks and many families were divided.

For thousands of years, the culture of Native Americans living on the Columbia Plateau has been intimately tied to the life cycle of salmon (Chatters and Pokotylo 1998:73). The timing of upstream migrations, locations of fishing sites, and the quantity and quality of salmon largely determined settlement patterns and seasonal mobility among Columbia Plateau peoples. During much of the year, Plateau peoples moved throughout their homeland in response to seasonal availability of foods and other subsistence resources (CTUIR n.d.). Co-utilization of resources by various tribes was common throughout the region, with no formal construct of resource or spatial ownership (Suphan 1974:74), although local bands might claim principal rights to prime fishing spots near their winter villages (Stern 1998:400).

Umatilla, Walla Walla, and Cayuse

The Umatilla People and Walla Walla are also Sahaptin-speaking tribes. The Umatilla were historically settled along both sides of the Columbia River in the vicinity of its confluence with the Umatilla River. The Walla Walla were generally located farther to the north, occupying lands along the Yakama, Walla Walla and Snake Rivers in present-day Washington. The Waiilatpuan-speaking Cayuse resided further to the south along the tributaries to the Umatilla and to the east of the Blue Mountains, where their territory overlapped with that of the Sahaptin-speaking Nez Perce (Walker 1998).

Situated at major river confluences, the Umatilla, Cayuse, and Walla Walla were ideally located to act as trade “middlemen” between people of the Plains and the tribes of the western valleys and Pacific coast. Interaction, including trade and intermarriage, with Western Sahaptin people was frequent, as their territory was located downriver (Stern 1998:647). With the adoption of the horse as a major cultural focus, the Cayuse enjoyed a more expansive subsistence area which may have even ranged eastward into the Great Plains (Hanes 1995). Kinkaide et al. (1998:61) noted that the Cayuse language was no longer spoken by the early 1830s, due in part to a decline in population and extensive intermarriage with the Nez Perce and Umatilla.

The establishment of Fort Nez Perces, later renamed Fort Walla Walla, in 1818 along the lower Walla Walla River and the 1836 Whitman Mission disrupted established trade ties within the region and accelerated further loss of population through disease. The following decades would be tumultuous, marked by incidents of violence between Native American tribes and Euro-Americans. The Umatilla Indian Reservation was created by the Treaty with the Walla Walla, Cayuse and Umatilla in 1855, under which the Cayuse, Umatilla and Walla Walla ceded more than 6 million acres of their traditional territory in northeast Oregon and southeast Washington. Today the Umatilla Reservation is approximately 172,000 acres.

A majority of the B2H Project area is located within lands ceded to the U.S. government by the 1855 Treaty. The CTUIR have reserved explicit hunting, fishing, gathering, and pasturing rights in that treaty; the CTUIR actively work with the United States Government in natural resources planning efforts to protect their off-reservation treaty rights. (Phinney and Karson 2007).

Nez Perce

Before incursions by Euro-Americans, the Nez Perce occupied a vast territory, stretching from the Lochsa River in western Montana, to the eastern Blue Mountains, and south to the Weiser River and the headwaters of the South and Middle Forks of the Salmon River in central Idaho. Seasonal migrations, housing, food, storage, and basketry were similar to that of other southern Plateau groups. The Nez Perce homeland intersects the project area in the vicinity of Elgin and the southern Wallowas. The tribe ceded lands in present-day eastern Baker and Wallowa counties, east and north of the project area (Nez Perce Treaty of 1855).

The Nez Perce practiced a seasonal subsistence cycle. In the spring, women traveled to the lower valleys to dig root crops, while men traveled to the Snake and Columbia rivers to fish during the salmon runs. By mid-summer, groups moved to mountain areas to gather berries, fish in the streams, and hunt big game. With the adoption of the horse after A.D. 1700, some men would travel to the Montana Plains to hunt bison. By November, the groups returned to their traditional villages along the Snake, Clearwater, and Salmon Rivers.

Like the Umatilla and Walla Walla, the Nez Perce are also Sahaptin speakers. Bands of Nez Perce also participated in the Treaty of 1855, ceding large portions of their lands to the U.S. government in exchange for reserved lands. The discovery of gold on Nez Perce lands in 1860 spurred the U.S. decision to press for a renegotiation of this treaty in 1863 to reduce reserved lands to the approximately 1,000 square miles of what was subsequently deemed the Lapwai Reservation, just east of the Oregon and Idaho border. Many bands of Nez Perce, especially those who had relatives among the Umatilla, refused to enter into this treaty; the band led by Chief Joseph, the elder remained in the Wallowa Valley. By 1877, the Nez Perce had been pushed out of the Wallowa Valley; displaced, and beleaguered by internal and external conflict; the Wallowa bands commenced a three-month long flight variously referred to as the Nez Perce War or Chief Joseph's War. This flight would eventually find them in Montana, where in October of 1878, Chief Joseph (the younger) would surrender to the U.S. Government (Ruby and Brown 1981). The Nez Perce captives would eventually be sent to Oklahoma, and would remain at the Ponca Agency in Indian Territory until 1885. After impassioned lobbying from Nez Perce leaders, including Yellow Bull and Chief Joseph, families of Nez Perce were allowed to return to the reservation at Lapwai. Families of the Joseph Band were resettled at Colville, where they became part of the Confederated Tribes of the Colville Reservation (Hanes 1995). Today, descendants of the Nez Perce live on the Colville, Lapwai and Umatilla Reservations.

Ethnography of the Northern Great Basin

In the northern Great Basin, the project traverses the traditional territories of at least three Native American groups. The Project area includes traditional lands of the Western Shoshone, Northern Shoshone-Bannock, and the Northern Paiute. Although the commonly held traditional boundary of the Western Shoshone is located just south of the Project area, interaction likely occurred among the Western Shoshone and the Northern Paiute, Bannock, and Northern Shoshone (Figure 3-47). These three groups spoke several mutually intelligible varieties of Central and Western Numic, a component of the Numic branch of the Uto-Aztecan language family. The Central Numic embraces three distinct languages: Panamint, Shoshone, and Comanche.

The timing of migration of the Numic or Shoshone people eastward across the Great Basin from southern California is greatly debated. The earliest definite evidence of Shoshone material culture remains comprise the Lemhi phase in Birch Creek Valley, which dates from the Early Historic period around A.D. 1805 to 1840 (Murphy and Murphy 1986). Questions remain regarding the cultural history of the area prior to occupation by the Shoshone in what is commonly conceived as the "historic period" Butler 1986:133). As mentioned earlier, some tribes reject the notion of "prehistoric" and "historic," preferring to discuss their history as a continuum. Regardless, evidence of Shoshone occupation marks the Upper Snake and Salmon River region as a subarea of the Great Basin culture area. The apparent continuity of aboriginal settlement and subsistence patterns through the Holocene was affected by the introduction of the horse in the mid1700s, which afforded Numic groups the enhanced the mobility for hunting far ranging bison herds (Steward 1938:201).

Ethnohistoric studies indicate that, following the introduction of the horse, aboriginal groups residing in the Snake River Plain were highly mobile, and ranged across not only the Great Basin and the Columbia River Plateau, but also onto the Great Plains.

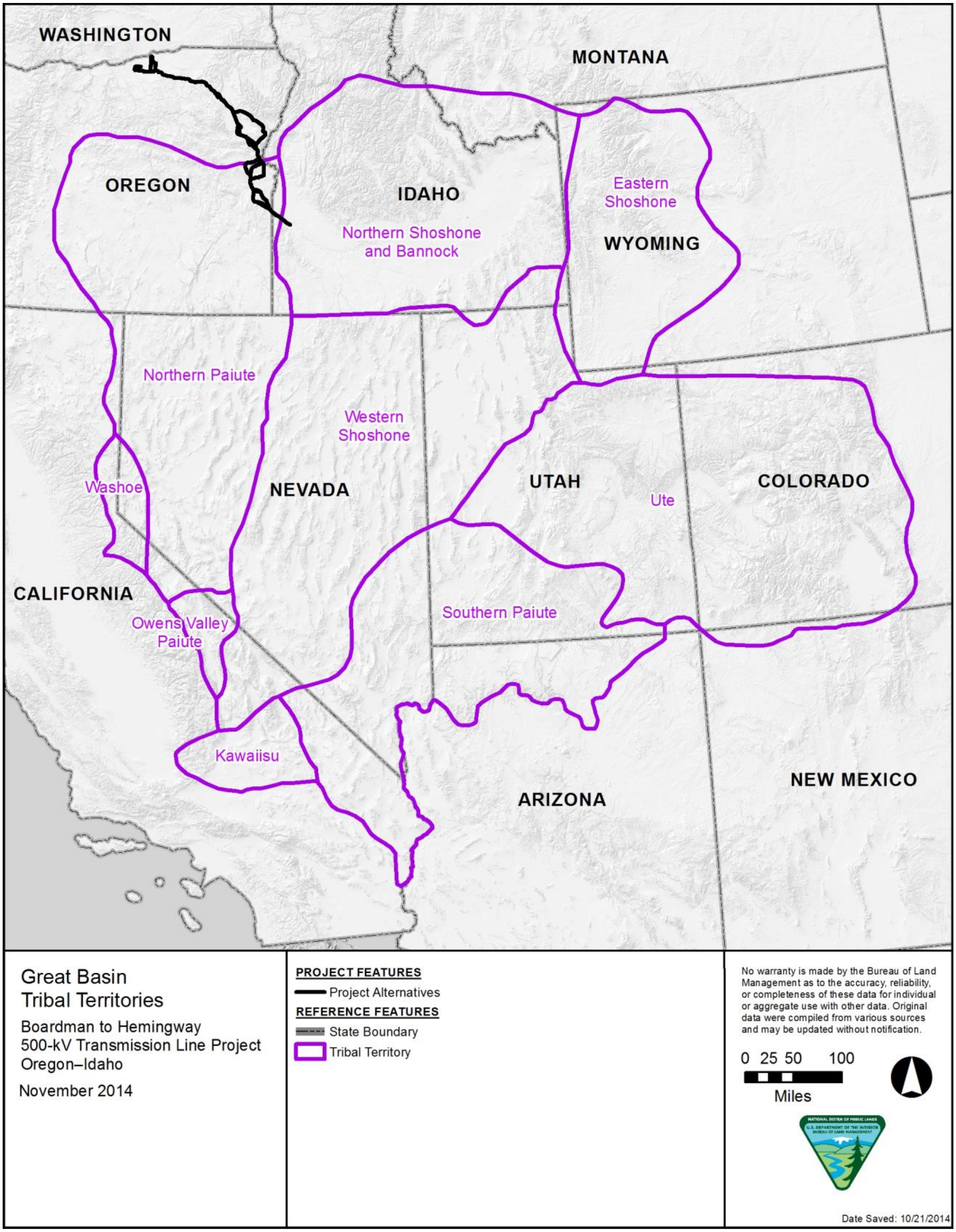

Figure 3-47. Diagrammatic Map of Tribal Territories of the Great Basin (source: d'Azevedo 1986)

Western Shoshone

Western Shoshone territory spans a vast area between the Blue Mountains or Cascade Mountains on the west, the Rocky Mountains on the east, north to the Salmon River Mountains, and South to the Great Basin (Thomas et al. 1986:264). As many as 48 separate subgroups of Shoshone peoples occupied the ancestral homelands across the Great Basin Province (Steward 1937, 1938). The northern boundary of the Western Shoshone territorial land is rather ambiguous and possibly extended north as far as the Snake and Salmon River drainages (Thomas et al. 1986:262).

Unlike the Shoshone to the east, the Western Shoshone people did not possess a mode of subsistence focused on the horse. Gathering of seasonal floral and faunal resources often required frequent residential and logistic moves, based on cyclic variations in rainfall and plant growth. The winter village was typically the larger of the seasonal camps and group efforts provided subsistence when seasonal plants were unavailable.

Northern Shoshone and Bannock

At the time of Euro-American arrival in the mid nineteenth century, much of Idaho was home to the Northern Shoshone and Bannock tribes. The Northern Shoshone and Bannock occupied the area encompassing the Snake River Plain ranging from the Nevada border to the south, the Wyoming border to the east, the Oregon border to the west, and the Salmon River to the north (Murphy and Murphy 1986:287). Walker (1978:89) notes that Shoshone and Bannock territory extended across most of southern Idaho into western Wyoming, Nevada, and Utah.

Hanes (1995) notes that the Northern Shoshone are often referred to as the “Snake” Indians in historic accounts, based upon their close association with the lands and resources of the Snake River. The ethnographic territory of the Northern Shoshone, who shared much the same material culture and social organization with the Northern Paiute, extended farther south through most of Nevada, and north into northwestern Utah and eastern Idaho (Murphy and Murphy 1986:288). In southwestern Idaho, Northern Shoshone populations were centered on the Boise, Weiser, and Payette River drainages (Murphy and Murphy 1986:288). Other Shoshone groups practicing a more sedentary fishing economy were settled in the Boise and Bruneau River valleys. Still other bands of Shoshone, identified as “Sheepeater” or “Lemhi” in historic accounts, focused subsistence on hunting and gathering of mountain resources.

The Bannock were historically associated with the Northern Shoshone, and shared many cultural similarities. However, the Bannock possessed a different dialect from Shoshone, and possessed a focus upon the horse as a key element of their subsistence and culture. The use of horses in the mid-1700s (Steward 1938) allowed for the expansion of hunting territories as far north as Canada and east into Montana and Wyoming.

The Fort Bridger Treaty of 1868 settled families of Shoshone and Bannock on the Fort Hall Reservation. In exchange for yielding their traditional homelands, the Shoshone and Bannock reserved, through Treaty, certain rights outside of their reservation boundaries, including hunting, fishing, gathering and grazing. In 1907, additional families were relocated from the Lemhi Reservation after it was disbanded (Hanes 1995). Some Shoshone and Bannock families who had lived along the Owyhee River also settled on the Duck Valley Reservation, established by Executive Order in 1877 near the border of Idaho and Nevada (Shoshone Paiute Tribes 2009). They were later joined by groups of Paiute from the Weiser area, and eventually Paiute from southeast Oregon and Idaho, and as far north as the Yakama Reservation. The tribes comprising the Shoshone Paiute Tribes of the Duck Valley Indian Reservation did not sign the Fort Bridger Treaty and claim aboriginal title to lands in the project area.

Northern Paiute

The people known today as Northern Paiute are descendants of culturally distinct groups sharing a common language. At the time of Euro-American contact, the Northern Paiute ranged from southeastern Oregon east into southwestern Idaho and northwestern Nevada, encompassing much of the Owyhee Uplands. The Northern Paiute represent the northern extent of the Great Basin cultural complex. However, in the north, this complex was highly influenced by long-standing traditions of travel, trade, intermarriage, and co-utilization of resources with Plateau peoples living in the Blue Mountains and the Owyhee Uplands.

Some Northern Paiute bands in eastern Oregon and along the Snake River plain obtained the horse around 1750 A.D. They, along with the Northern Shoshone and Bannock, traveled widely through the Snake River plain and beyond. However, other bands of Northern Paiute did not adopt the horse complex, and focused instead on hunting and gathering resources. The gathering of camas root, in particular, reflected an important aspect of Paiute identity, and loss of access to the culturally significant and economically vital Camas Prairie of southwestern Idaho has been ascribed as a factor contributing to the 1878 Bannock War, which ultimately resulted in the “forced march” of approximately 550Paiute people from Fort Harney 350 miles north to Fort Simcoe, Washington on the Yakama Reservation (Ruby and Brown 1981). Circumstances of the “Forced March” are paraphrased in the accounts of Paiute chronicler Sarah Winnemucca Hopkins:

> They were poorly clad. Children froze to death, and mothers died during childbirth along the way. The Indians were not even allowed to bury their dead. On February 2, 1879, 543 Paiutes stumbled into the Simcoe Agency, where they were herded into cold sheds, “like so many horses and cattle.” (Ruby and Brown 1981:255)

Although historical documentation from Winnemucca Hopkins and Indian Agent W.V. Rinehart indicates that the route of the “Forced March” would have followed a south-north trajectory, government-to-government consultation with the Shoshone Paiute Tribes suggests that travel may have occurred from east to west within the B2H Project area in roughly the same corridor as the Oregon Trail.

Cultural resources that may be associated with American Indian use of the land encompass TCPs (which include, but are not limited to, viewsheds, mountains and other landforms, and plant gathering locations), rock alignments and cairns, trails- such as the abovementioned “Trail of Tears”, burials and locations of deceased people, camps, and petroglyphs.

PREHISTORIC RESOURCE OVERVIEW

The analysis area encompasses portions of the Columbia Plateau and Great Basin cultural areas, each representing expansive geographic locations where indigenous peoples shared broadly similar social, subsistence, and material culture (Lohse and Sprague 1998). The Columbia Plateau culture area includes all of the area drained by the Columbia and Fraser rivers, with the exception of that portion of the Snake River that drains the northern Great Basin. The Great Basin culture area, based on shared language, technological similarities, and cultural attributes, is considerably larger, including all of Nevada and Utah, southeastern and south-central Oregon, southern and central Idaho, and the western portions of Wyoming and Colorado (d'Azevedo 1986:8). A comprehensive culture history of the analysis area can be found in Andrefsky (2004), Burtchard (1998), Jennings (1986), Leonhardy and Rice (1970), and Lohse and Sprage (1998). The discussion below provides a summary of culture chronologies for each region, as informed by previous archaeological research of the area.

COLUMBIA PLATEAU

Various culture chronologies have been proposed for the Columbia Plateau and its various subregions and are summarized in Figure 3-48. This overview is intended only as a general outline and is largely based on Galm et al. (1981), Ames et al. (1998), and Andrefsky (2004)—all of which are founded on the initial and seminal culture histories of the region by Daugherty (1956), Cressman et al. (1960), Butler (1961) and Leonhardy and Rice (1970). While subsequent cultural-historical and cultural-ecological models have been conducted within and surrounding the project area—Reid (1988), Burtchard (1998), Dumond and Minor (1983) and Davis (2001) among others—all largely support or refine the initial human temporal-spatial record of the Southern Columbia Plateau region of Oregon.

Leonhardy and Rice's (1970) chronology, based upon the collections from several large, well-documented archaeological sites, employed changes in tool assemblages and morphology to define six phases of cultural chronology on the Columbia Plateau between approximately 10,000 Before Present (BP) and around A.D. 1730 in the Lower Snake River region of southeastern Washington. Dumond and Minor (1983) proposed a chronology for north-central Oregon based on the Wildcat Canyon site (35GM09) and sites in central Oregon.

Importantly, the southern Columbia Plateau is in close proximity to the Northern Great Basin culture area, and multiple researchers have suggested that a combination of both culture areas is commonly observed—particularly during the Late Prehistoric period (Cressman 1986; Ames et al. 1998). As such, archaeological assemblages recovered within the Southern Columbia Plateau commonly include cultural elements from both regions. For example, Reid (1988) developed a cultural-historical model for the Blue Mountain physiographic province in northeastern Oregon and cited the common occurrence of Elko points as an indicator of increased influence of Great Basin culture in the Southern Columbia Plateau.

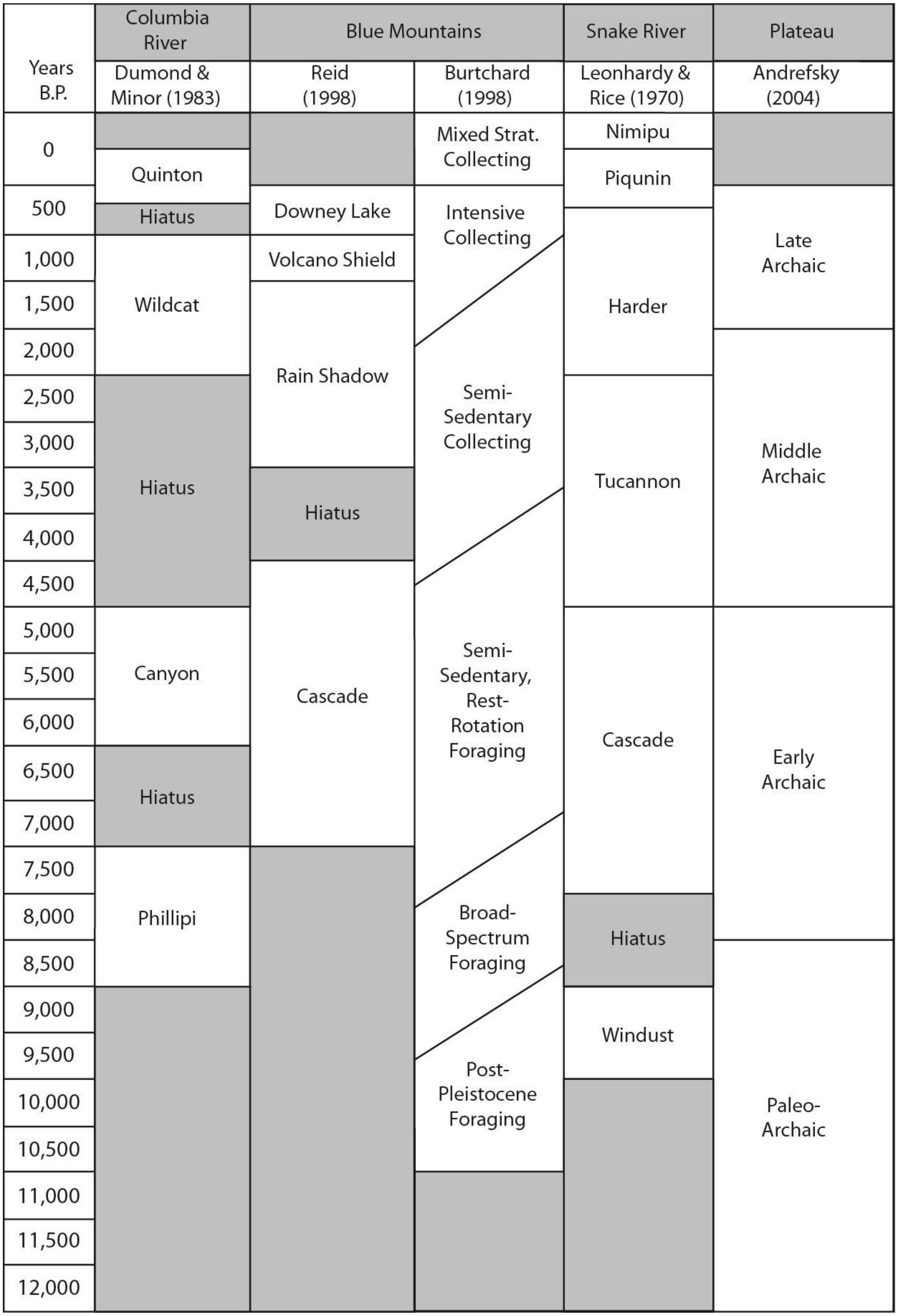

Figure 3-48. Cultural Chronologies for the Southern Columbia Plateau

Andrefsky (2004) provides a useful synthesis of several chronologies to achieve a simplified four-phase sequence for the Plateau, which includes the Paleoarchaic (pre-12,000 to 8500 BP), the Early Archaic (8500 to 5000 BP), the Middle Archaic (5,000 to 2,000 BP), and the Late Archaic (2000 to 500 BP). Figure 3-48indicates which regional phases discussed above correspond to Andrefsky's chronological periods. This temporally structured model allows for more effective comparison between the archaeological chronology of the Columbia Plateau and Jennings' chronology for the Great Basin (Jennings 1986:115), and is used here.

Columbia Plateau Paleoarchaic Period

The Paleoarchaic period dates from sometime prior to 12,000 and continues to 8250 BP (Ames et al. 1998; Andrefsky 2004). This period represents the earliest archaeological evidence of human occupation in the Southern Columbia Plateau. As late as Ames et al.'s (1998) cultural-historical model, this period has traditionally been divided into Period 1A—referring to Clovis, or the Western Fluted Point Tradition (WFPT)— and Period 1B—referring to Post-Clovis, or the Western Stemmed Point Tradition (WSPT). However, since the published culture-history by Ames et al. (1998), subsequent research conducted at numerous sites throughout the Plateau region and larger Pacific Northwest area has served to largely dispel a Clovis-first explanation for the earliest human occupation for the region (Davis 2001; Davis et al. 2011; Jenkins et al. 2012). Instead, the WSPT—correlating to Ames et al.'s (1998) Period 1B and Andrefsky's (2004) Paleoarchaic period- represents the earliest documented human groups in the Columbia Plateau. While debate continues to surround the temporal order of these two significantly different techno-complexes, they do temporally overlap during the terminal Pleistocene in the Pacific Northwest and Great Basin. This has led some researchers to consider an early co-tradition occupation of the region most likely consisting of two distinct ethno-linguistic cultures with different technological organization (Bryan 1988; Davis et al. 2011).

Western Stemmed Point Tradition sites are more common within the Columbia Plateau and numerous intact deposits containing WSPT assemblages—Lind Coulee, Marmes Rockshelter, Cooper's Ferry and Hatwai among others—have been excavated. Hunter-gatherer groups associated with the Western Stemmed Point Tradition are described as following a broad-spectrum and flexible adaptation to the Pacific Northwest's mosaic environments using a diverse and generalized lithic technological organization (Ames et al. 1998; Bryan 1980 and 1988). Western Stemmed Point Tradition artifact assemblages commonly include formally modified flakes and blades—including unifaces, gravers and burins—grooved bolas, eyed-bone needles, bone awls, beads, antler wedges, small milling stones, and the adaptation of a dart point and atlatl technology (Ames et al. 1998). These dart point types include among others Windust (shouldered and stemmed lanceolate points) and Cascade (unstemmed, foliate or laurel-leaf shaped points) (Ames et al. 1998). Western Stemmed Point Tradition sites are often located along the Snake River and its tributaries, the Lower Salmon River in western Idaho, as well as the surrounding plateaus and mountainous uplands, including Pilcher Creek in the Blue Mountains (Brauner 1985). Recent excavations at Paisley Caves in southeastern Oregon resulted in the recovery of a small Western Stemmed Point Tradition lithic assemblage associated with an age estimate of 11,340 B.P. (Jenkins et al. 2012). The Cooper's Ferry site in western Idaho includes an extensive WSPT component with potential occupation beginning around 11,370 B.P. (Davis 2001).

The archaeological record from the WFPT is sparse, and generally viewed as indicative of small, highly mobile groups which focused on exploiting a variety of resources. Artifacts associated with WFPT assemblages include formalized bone tools, large bifaces, unifacial tools, and the hallmark fluted bifacial projectile point (i.e., Clovis) that were likely used as spear points. WFPT surface finds are present throughout the region. However, intact WFPT deposits have only been identified at the Richey-Roberts Clovis Cache near Wenatchee, Washington. The artifact assemblage from this site is extensive and specialized, likely reflecting ceremonial activities associated with intentional human interment (Ames et al. 1998). While the Richey-Roberts Clovis Cache is a buried WFPT component, absolute age assessments failed to securely date the site (Mehringer and Foit 1990). The Dietz Site in southern Oregon is an extensive WFPT lithic surface assemblage (Willig 1988; Pinson 2011). However, diagnostic WSPT lithic artifacts are also present (Willig 1988).

Columbia Plateau Archaic Period

The Archaic period in the Columbia Plateau contains three subdivisions: Early, Middle, and Late. The overall Archaic period is generally characterized by substantial changes in subsistence and material culture. The Late Pleistocene-Early Holocene transition in the Pacific Northwest and Northern Great Basin is marked by increasingly warmer temperatures and dry conditions following the retreat of continental glaciers. Resulting shifts in flora and fauna populations correspond with noticeable changes in the Columbia Plateau and Northern Great Basin archaeological records (Grayson 1993; Chatters 1998). These transitions in human behavioral patterns—including cultural innovation and technological organization—are apparent in changes observed in the Early, Middle, and Late Archaic material records.

Columbia Plateau Early Archaic Sub-Period

The Early Archaic sub-period of the Columbia Plateau dates from 8250 to 5000 BP. Projectile point size and configuration indicate substantial reliance on hunting mammals. However, exploitation of fish and root crops appears to increase over the period, as evidenced by occasional discoveries of fishing tackle (Ames et al. 1998), pounding stones, and manos (Andrefsky 2004) at archaeological sites dating to this sub-period. The presence of nonlocal obsidian at Early Archaic sites suggests an increase in widespread mobility and/or development of trade routes (Salo 1985).

Early Archaic sites are found in a variety of geographical settings and include an increased diversity in site function and site composition designating shifting regional settlement and subsistence patterns during this period. Lithic technological organization, group mobility, residential patterns, and diet breadth correlate to the newly established Holocene ecosystems within the region. Lithic artifacts recovered at these sites typically include foliate or leaf-shaped (Cascade) projectile points; tabular and keeled end scrapers; formal and non-formal modified flakes and macroblades; and cobble/pebble tools including groundstone. Groups during this period practiced a generalized subsistence economy with a broad range of diet that included hunting of small and large game, gathering of edible plants, and procurement of riverine resources such as shellfish (mussels), salmon and steelhead. Burials recovered from archaeological sites dating to this period were flexed and extended.

Columbia Plateau Middle Archaic Sub-Period

The initial emergence of semi-subterranean pithouses occurs during the Middle Archaic (5000 to 2000 BP) and is suggestive of a region-wide shift towards a semi-sedentary pattern with a marked decrease in residential mobility (Prentiss et al. 2006; Andrefsky 2004; Chatters 2004). The transition from Early to Middle Archaic on the Plateau saw projectile point morphology and design transition towards the production of relatively smaller-sized projectile points, presumably to be used as dart points (Northern Side Notched, Cold Springs, and Bitterroot) and delivered with spear and atlatl. Cascade type projectile points continue in the early portion of the Middle Archaic although there is a noticeable decrease in the frequency of projectile points from this period in the archaeological record (Ames et al. 1998).

Potential influence—or some form of cultural transmission—originating from the Northern Great Basin region into the Southern Columbia Plateau region occurs toward the later period of the Middle Archaic. Large, side-notched points exhibiting low notches at the base, expanding stems, and short barbs are similar to those attributed to the Great Basin Elko series. Additionally, projectile points with pronounced shoulders and contracting stems are similar in morphology to the Pinto type projectile point of the Great Basin (Lohse 1995).

The Middle Archaic period is additionally marked by an increasing reliance on seasonal gathering and processing of plants and the initial establishment of a surplus food economy. Storage pit features are more common at archeological sites during this time as well as an increase in the diversity—in terms of frequency, type, and, more particularly, size—of grinding and milling stones (e.g. hopper mortar bases, pestles, and anvils) used for seed, plant and fish processing (Lohse and Sammons-Lohse 1986). Salmon and shellfish exploitation also seem to have gained in importance with the establishment of seasonal fisheries signaling a central focus on riverine resources as part of an annual round.

Columbia Plateau Late Archaic Sub-Period

The Late Archaic sub-period of the Southern Columbia Plateau dates from 2000 to 500 BP. And includes the late portion of the Tucannon phase, as well as the Harder, Piquinin, and Numipu phases (Leohnardy and Rice 1970; Ames et al. 1998). This period is markedly distinct from any previous cultural periods as is evidenced by the extensive use of pit-houses and a dramatic shift in human land use patterns throughout the Columbia Plateau and Northern Great Basin regions. Archaeological evidence from this period is indicative of long term, semi-permanent residential sites or villages, special use camps, an ever-increasing reliance on fishing—specifically the harvesting and storage of salmon—and the exploitation and processing of camas. During the Late Archaic, increased reliance on seasonally varying resources—specifically salmon and camas—resulted in the establishment of large, long-term canyon and river terrace residential camps or villages for use in winter and spring and smaller, task-specific upland camps used for summer and fall foraging. This pattern of land use is commonly referred to in archaeological literature as the “Winter Village Pattern” (Endacott 1992; Ames et al. 1998; Andrefsky 2004; Chatters 2004).

The Late Archaic is also characterized by the appearance of small Corner-notched and basal-notched points by approximately 2400 BP, signaling the advent of bow and arrow technology (Andrefsky 2004). The earlier subphase is denoted by camp sites, and the later subphase by pit-house villages. The early subphase artifact assemblage is characterized by large basal-notched and Corner-notched projectile point types including the Snake River Corner-notched point. The points become smaller and more finely made in the later subphase. The artifact assemblages for both are marked by small end scrapers, a distinctive concave bit scraper, lanceolate and pentagon-shaped knives, cobble implements, pounding stones, pestles, hopper mortar bases, and net sinkers. Large and small game was hunted, including bison and mountain sheep, and salmon fishing was important. Pit house settlements become well-established during the phase along with an increased reliance on fishing.

Domestic architecture during the Late Archaic transitioned from pit houses to the construction of longhouses. Fishing net weights are increasingly common at sites dating to this period, suggesting a refinement in net making and the increasing reliance on anadromous fishing. The bow and arrow, basketry, and a fiber and wood industry are also introduced and become widespread during the Late Archaic period. A surplus resource economy is suggested by the common occurrence of storage pit features which contain the remains of salmon. Burials identified in the Late Archaic contexts are single flexed internments (Lohse 1995).

Projectile points known from the Middle Archaic period continue to occur in Late Archaic period assemblages including Hatwai-eared, Rabbit Island Stemmed-like, and larger side-notched types (Ames et al. 1998). Evidence for the culturally transitional nature of this region is supported by increased occurrences of similar Northern Great Basin types—Elko-Eared and Elko Side-Notched types (Ames et al. 1998; Reid 1998). These larger forms are gradually—but eventually—replaced by smaller corner- and basal-notched forms (Ames et al. 1998)—as well as Desert Side-notched-like points (Aikens 1993)—likely used with bow and arrow technology around 3,000 cal B.P. (Chatters 2004). Arrow-like point types tend to dominate the most recent sites of the Late Archaic period and continued to be used into the period of Euro-American contact. However, Ames et al. (2010) suggest these small projectile points may have been in use as early as 4,400 B.P., where they would have co-existed with atlatl technology (i.e., dart points).

Columbia Plateau Late Prehistoric Period

The Late Prehistoric Period (post-A.D. 1450) on the Columbia Plateau is characterized by Leonhardy and Rice (1970) as the Nimipu (A.D. 1700 to historic contact) and Piqunin (A.D. 1350 to 1700) phases on the Lower Snake River. The Piqunin Phase was developed based on the need for a separate designation for a late archaeological component at the Wexpusnime housepit settlement (45GA61) in southeastern Washington. The diagnostic artifacts included variable forms of small basal-notched, Corner-notched, and Side-notched projectile points.

Other apparent cultural and material transitions during this time include the increased presence of varyng sized pithouses, an increase in larger settlements and villages, the advent of mat lodges, the A.D. 500, an intensive exploitation of camas and other roots, ubiquitous practice of fishing and net use, prevalent use of storage facilities including storage pits and caves, intensive exploitation of salmon, and evidence of food propagation. Basketry, fiber, and wood artifacts are also present, as are small projectile points suggesting an increase in the use of the bow and arrow. Sometime after 1500 B.P., burial practices also transition from the Western Idaho Burial Complex to formal cemeteries associated with pit-house villages.

The introduction of the horse from Euro-American explorers and settlers is typically invoked as ending the Late Prehistoric period. By the time of contact with Euro-American cultures in the early 1700s, the historically documented groups still present today were living in Northeast Oregon, including the Cayuse, Umatilla, Walla Walla, Nez Perce and Paiute.

Northern Great Basin

The Proposed Action traverses the northeastern corner of the Great Basin culture area, an expansive region encompassing some 400,000 square miles of western North America between the Sierra Nevada and the Rocky Mountains (d'Azevedo 1986). Data produced by several researchers has largely defined the culture history of this area. The four-phase chronology presented by Jennings (1986) is the most commonly cited description of Great Basin cultural history. This chronology uses general prehistoric periods to define the cultural sequence of the Great Basin, providing a larger framework that incorporates data from each subarea within the basin. The four periods include: Pre-Archaic (Pre-9000 BP), Early Archaic (9000 to 3500 BP), Middle Archaic (3500 to 750 BP), and Late Archaic (750 BP to historic contact).

Jennings' definitional approach for the northern Great Basin overlaps with that proposed by Andrefsky et al. (2003) for the Columbia Plateau. Andrefsky and colleagues (2003), however, point out the inadequacies of a Plateau-based chronology for the northern Great Basin, in that some characteristics of Great Basin culture (for example, pottery production, dwelling types and materials, and some lithic technologies) are not hallmark Plateau traits. Moreover, much of the data for the Jennings' chronology come from sites farther to the east with presumably more Plains influence. Meatte's (1989) approach to pre-contact chronology in the project region is based on three premises: a hydrologically distinct drainage that includes the Payette, Weiser, Owyhee, Malheur, Boise, Bruneau, and Malad rivers; the pre-contact existence of anadromous fishery; and a purported tendency for cultural groups to define their territories by natural drainage patterns. Dating in Meatte's chronology is based primarily on obsidian hydration, C14 analysis, and evidence of food processing and storage rather than the stylistic changes in projectile points that define phases in other chronologies. Meatte's review of more than 100 sites resulted in three overarching archaeological sequences in his western Snake River Basin chronology: Broad Spectrum Foragers (11,500 to 4200 BP), Semi-Sedentary Foragers (4200 to 250 BP), and Equestrian Foragers (250 to 100 BP).

The best evidence for early occupation of the western Snake Basin is the presence of an extensive cache of Clovis points discovered at Camas Prairie. Meatte places the Broad Spectrum Forager phase within this very early time span based on the recovery of a Clovis Point south of Marsing, Idaho (within 2 miles of the southern terminus of the project). This phase was characterized by mobile groups employing simple tools and exploiting a variety of resources over a large geographic area. Meatte establishes a diversification in projectile point morphology over the course of this long epoch, beginning with Clovis and progressing through Folsom, Windust, Haskett, Cascade, and Northern Side-Notch

(Bedwell 1973; Musil 2004). The subsistence economy associated with this technology is assumed to also be similar: highly mobile and centered on big game hunting.

The Fort Rock Basin, in Lake County to the west of the project area, was the subject of intensive study by the University of Oregon Archaeological Field School. This research established the Fort Rock Basin cultural chronology, which is specific to the northern Great Basin in Oregon. The Fort Rock Basin chronology was developed primarily based on work conducted at Fort Rock Cave (Cressman 1942; Cressman and Williams 1940), Paisley Caves (Bedwell 1970, 1973; Bedwell and Cressman 1971; Cressman 1942; Cressman and Williams 1940), Cougar Mountain Cave (Cowles 1960; Layton 1972a, 1972b), and the Connley Caves (Bedwell 1970, 1973; Cressman 1986). Cressman's work at Fork Rock Cave and Paisley Cave (Cressman 1942; Cressman and Williams 1940) established the Early Holocene occupation of the region, and Bedwell (1970, 1973) drew upon this research with more intensive investigations. Other south-central Oregon sites, such as the Shepherd Site (Musil 1984, 2004), Dietz Site (Fagan 1983, 1984a, 1984b), and Tucker Site also contributed to development of the regional cultural sequence. Archaeological investigations in the southeastern Oregon area also included work at Catlow and Roaring Springs Caves (Cressman et al. 1940; Cressman 1942) and Dirty Shame Rockshelter (Aikens et al. 1977).

The research generated from these excavations resulted in a comprehensive overview of the basin's culture history and ecology (Aikens and Jenkins 1994; Jenkins et al. 2004). Aikens and Jenkins' overview establishes that culture change in the northern Great Basin was molded to a significant degree by climatic and ecological events at the regional and subregional levels. From the perspective of Fort Rock Basin, the development of a cultural chronological sequence was tied to intense climatic events that affected the human ecology of the region. Such events included unusually hot and cold thermal regimes, flooded marshes, and extended periods of drought. These climatic events prompted cultural responses and patterned lifeways that have been defined in the archaeological record in five time periods: the Paisley Period, Fort Rock Period, Lunette Lake Period, Bergen Period, and Late Holocene Period (Jenkins et al. 2004). Figure 3-49 provides a comparison of the various northern Great Basin chronologies. The culture history provided below for the B2H project area is based on the previous research summarized above, as well as research conducted at archaeological sites located near the project area.

Northern Great Basin Pre-Archaic Period

The Pre-Archaic Period (referred to as the Paleoarchaic Period in the Columbia Plateau) dates from 14,500 to 9500BP, spanning the Late Pleistocene and Early Holocene. It includes the Paisley Period and Fort Rock Periods of the Fort Rock Basin chronology. The period is typically associated with the hunting of now-extinct megafauna, including proboscideans and certain species of bison, among other large game species that included camel, horse, mountain sheep, elk, and deer. In the Snake River Plain, the Pre-Archaic Period is subdivided based on changes in distinctive spear point technology and associated with direct or relative dating of sites. These sub-periods include the Pre-Clovis (prior to 12,000 BP), Clovis (12,000 to 11,000 BP), Folsom (11,000 to 10,600 BP), and Plano (10,600 to 7800 BP) periods (Plew 2008:23).Characteristics of these sub-periods are detailed in the sections that follow below.

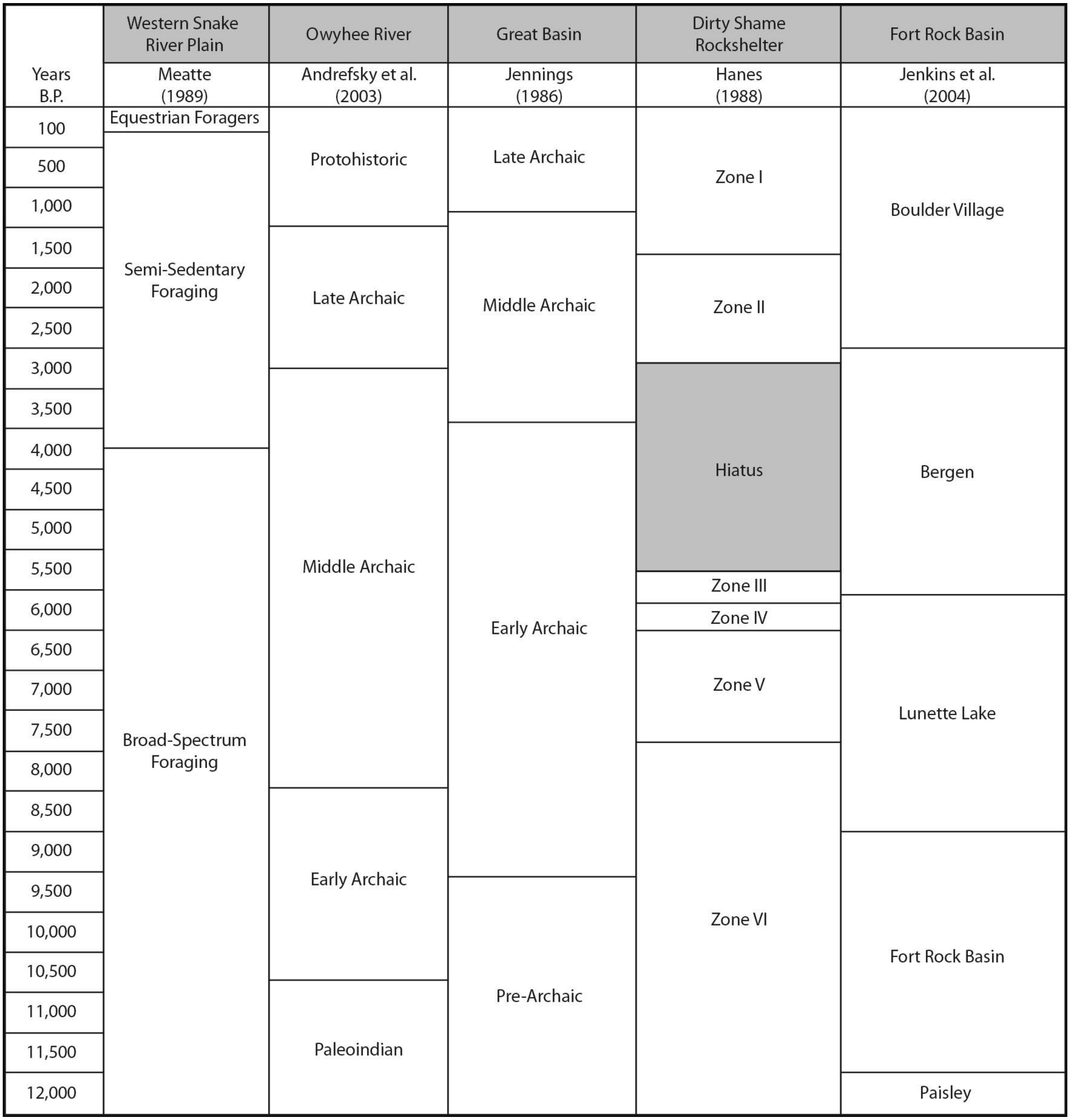

Figure 3-49. Comparison of Cultural Chronologies for the Northern Great Basin

Northern Great Basin Pre-Clovis Sub-Period

A Pre-Clovis sub-period (prior to 12,000 BP) has recently become accepted for the New World, though data is currently scarce and a comprehensive picture of cultures dating to this time period has yet to emerge. (Adovasio and Page 2003; Dillehay 1989, 2000; Yohe and Woods 2002).The timeframe is included in the Paisley Period and the early phase of the Fort Rock Period of the Fort Rock Basin chronology. Two well-known sites dating to this period are the Paisley Caves (Jenkins et al. 2012), located 300 miles west of the project in the Fort Rock Basin area, and Wilson Butte Cave (Gruhn 1961a, 2006), located approximately 150 miles southeast of the project in south-central Idaho near Dietrich. Connley Caves, where the later WSPT was first recognized, also includes a Paisley Caves Period component (Aikens et al. 2011:63–65). Work by the University of Oregon at Paisley Caves provides some of the earliest direct evidence of a Pre-Clovis presence in Oregon, including human coprolites dated to 14,500 cal. BP and faunal remains dated to 16,190 cal. BP., and faunal remains from extinct species. (Aikens et al. 2011:51; Jenkins et al. 2012). Analyses of the coprolites showed that the site occupants ate a variety of plants, bison, fox, and sage-grouse, while residue analysis on one of the handstones identified horse protein. At least 15 radiocarbon and obsidian hydration dates are attributed to the Pre-Clovis sub-period (Aikens et al. 2011:53, Figure 2.13). Importantly, a small WSPT lithic assemblage including stemmed projectile points was recovered from a cultural deposit with a chronometric age estimate dating from 11,070 to 11,340 B.P.

Northern Great Basin Clovis Sub-Period

The Clovis sub-period dates from 12,000 to 11,000 BP and is encompassed by the Fort Rock Period of the Fort Rock Basin chronology. During this sub-period, climatic conditions became generally drier and warmer. A vast system of Pleistocene pluvial lakes that developed in western North America during the late Pleistocene turned seasonal as water tables gradually dropped. Clovis inhabitants of the area existed in small mobile bands, hunting mammoth and other now-extinct Pleistocene fauna, and many smaller species in riverine and lacustrine environments. Clovis toolkits are diverse and consistently exhibit high quality lithic materials procured from distant sources. The archaeological hallmark of the Clovis period is the Clovis projectile point—a large, lanceolate-shaped projectile point with a bifacial basal flute (Justice 2002:67; Yohe and Woods 2002). Although relatively rare in the Snake River Plain, several Clovis-age archaeological sites have been documented, including Jaguar Cave (Plew 2008:34), the Simon Site (Butler 1986a:128; Plew 2008:35), the Wilson Butte Cave (Gruhn 1961a), Kelvin's Cave (Meatte et al. 1988), the Buhl burial site (Green et al. 1998), and Diversion Dam Cave (Plew 2008: 34–40; Rodgers and Yohe 2006), all located in Idaho. Several Clovis-age occupations have been identified in the central and southeastern part of Oregon, including the Dietz Site, Paisley Caves, Sage Hen Gap, Sheep Mountain Clovis Site, and Connley Caves (Aikens et al. 2011). The Dietz Site, located in the Alkali Basin of southeastern Oregon, provides a definitive Clovis occupation based on diagnostic artifacts. The site is represented by a wide lithic surface scatter along the shoreline of a pluvial lake. Many of the tools were fluted Clovis points and concentrations of debitage included flute flakes and broken bifaces. Other tools include Western Stemmed projectile points, biface blanks, knives, preforms, scrapers, gravers, flake tools, hammerstones, and abraders.

The Western Pluvial Lake Tradition (about 13,000 to 8,500 cal. BP) also occurred during this period. The tradition was first proposed by Stephen F. Bedwell in 1970 and is based on his findings at the Connley Caves site in Fort Rock Basin; the adaption focused on lakeside settlement with distinctive stemmed (and non-fluted) Late Pleistocene and Early Holocene lithic technologies. Subsistence practices focused on marshland resources, but also included a variety of terrestrial mammals as well (Jenkins et al. 2004:6, 11). Some researchers view the adaptation as a bridge between the more highly mobile Paleoindian big game hunters of the Pre-Clovis/Clovis Periods and later periods (Pinson 2004:53). Stone tools typical of the tradition include Western Stemmed, Windust, lanceolate, and foliate projectile points, as well as crescents, large scrapers, bifaces, gravers, choppers, cobblestone tools, manos, and bone awls. It should be noted that evidence of the tradition is inconsistent in Fort Rock Basin (Jenkins et al. 2004:11–16).

Northern Great Basin Folsom Sub-Period

The subsequent Folsom sub-period dates from 11,000 to 10,600 BP and is also encompassed by the Fort Rock Period of the Fort Rock Basin chronology. Climatic shifts that began in the Clovis sub-period continued during this time, resulting in overall warming and more pronounced seasonality. Compared to modern conditions, temperatures were generally cooler, but began to approach modern patterns by the end of the sub-period. The process of Pleistocene megafaunal extinctions that began during the Clovis sub-period was largely complete by the end of the Folsom sub-period. Widespread changes in vegetation communities between 10,000 and 8,000 years ago are inferred to have contributed to the extinction of species of mammoth and mastodon, camel, and horse. While the overall diversity of mammalian species was reduced, the ranges of certain grassland-adapted species, such as bison, elk, moose, deer, and antelope, expanded (Yohe and Woods 2002). Folsom-age demographics were like those of the Clovis sub-period, with small bands of hunter-gatherers exploiting well-watered areas in an increasingly arid environment. Folsom sites are often associated with small-scale kills (up to 25 animals) of a now extinct form of bison, but an array of smaller mammal species were exploited as well. Folsom toolkits are highly diverse and display a range of both formal and expedient forms and, like Clovis, show a preference for high-quality lithic materials from widely distributed sources. Folsom projectile points are similar in form to Clovis points, but are generally smaller with fluting that extends along nearly the entire length of the blade.

The Folsom sub-period is represented in the Snake River Plain by widespread surface finds (Butler 1972, 1978; Dort and Miller 1977; Guilday 1967; S. Miller 1982; Ore 1968) and several buried contexts (Aikens et al. 2011). A Folsom point dating to 10,920 ± 150 BP associated with the remains of mammoth, camel, and an extinct form of bison was recovered at the Wasden site approximately 300 miles east of the project in the eastern Snake River Plain of Idaho. In Oregon, several have a recorded Folsom sub-period component, including Connley Caves, Paisley Caves, Paulina Lake, and the series of sites known as the Buffalo Flat Bunny Pits sites (Aikens et al. 2011). The Folsom Period/Fort Rock Period deposit at Connley Caves is stratigraphically bound by an earlier Pre-Clovis/Paisley Period and a later Plano/Lunette Lake Period deposit. The Folsom sub-period deposit produced a radiocarbon date of 10,940 cal. BP. The assemblage suggests that the site was used as a long-term winter base camp for big game hunting during the Folsom sub-period, and later as a short-term hunting and collecting campsite during the Lunette Lake Period (Aikens et al. 2011:64–65).

Northern Great Basin Plano Sub-Period

The Plano sub-period, dating to between 10,600 and 7800 BP includes the termination of the Fort Rock Period and most of the Pre-Mazama Lunette Lake Period of the Fort Rock Basin chronology. By this time, the Snake River Plain had evolved into a land of semi-arid to arid, shortgrass prairie with deciduous woodlands located along principal streams. Bison continued to diminish in size, but increased in absolute numbers and roamed an expanded range as grasslands proliferated. Human occupants responded to Plano environmental conditions by becoming highly specialized bison hunters and developing communal hunting techniques that, at times, resulted in the killing of 200 or more animals in a single event.

The Plano sub-period is characterized by a series of temporally and geographically overlapping projectile point traditions. Morphological variability is apparent in Plano assemblages, but points continued to be generally large and well made, often from high-quality nonlocal materials, an observation which further suggests that groups were increasing their geographic range. Lithic assemblages appear as an outgrowth of Folsom industries, but with greater morphological and perhaps functional variability. The Plano sub-period is well represented on the Snake River Plain by surface and subsurface finds consisting of a variety of unfluted lanceolate projectile points. . Plano sub-period artifacts have been found in the northern Great Basin including at Agate Basin (Miller 1977), Haskett (Butler 1965), Wasden (Butler 1965, 1986a; Strawn 1965; Davis et al. 1965), Wilson Butte Cave (Gruhn 1961a:118–119), American Falls (Butler 1965; Strawn 1965; Davis et al. 1965), Redfish Overhang (Sargeant 1973), Scottsbluff, Eden, Angustora, and Plainview (Gruhn 1961a, 1961b). In Oregon, Fort Rock Cave, Paisley Caves, Connley Caves, Cougar Mountain Cave, Paulina Lake, the Buffalo Flat Bunny Pits sites, and the Locality III site all include Plano sub-period components (Aikens et al. 2011). These sites are typically associated with the hunting of bison (Butler 1978, 1986b) and mountain sheep (Swanson 1972).

The Hetrick site in southwest Idaho consists of a multi-component habitation site near the confluence of the Weiser and Snake rivers and contains four distinct cultural levels with a broad spectrum subsistence strategy dating from 11,000 BP to 300 BP (Rudolph 1995). Artifacts include flake stone tools, groundstone, and bone. Faunal remains at the site include more than 78 taxa including deer, elk, bison, rabbit, bird, sheep, amphibians, reptiles, fish, and shellfish. Salmonid fish remains are also present and represent some of the earliest known use of such fishes in the region (Rudolph 1995:8). Diagnostic artifacts include Windust (Early Archaic), Rosegate, Desert Side-Notched, and Cottonwood Triangular (Late Archaic) (Plew 2008:61).

The Dirty Shame Rockshelter provides the most comprehensive record of Burtchard’s (1998) Broad Spectrum Forager period during the Plano sub-period (Aikens et al. 1977). Excavations have provided numerous dates for the site, ranging between 10,800 and 400 cal. BP (Aikens et al. 2011:105). A diverse array of lithics, bone, and perishable materials was excavated from this deeply stratified streamside site; this evidence suggests that initial occupation at the site occurred by 9500 BP. Big game hunting is evident in the remains of mountain sheep and mule deer. Projectile point types include Windust, Northern Side-notched, Humboldt, and Elko series points. By 7,500 BP, groundstone metates are present, suggesting an increase in the use of plant resources. By 6,800 BP, grass-lined storage pits are also present at the site. Interestingly, there is a pronounced absence of human activity at this site between about 6,700 and 2,900 cal. BP, an extended period of arid conditions occurring during the Archaic Period/Bergen Period (Aikens et al. 2011:105).

Northern Great Basin Archaic Period

The Archaic Period in the Great Basin dates from 9,500 BP to historic contact and, similar to the Columbia Plateau, is subdivided into Early, Middle, and Late Archaic sub-periods (Simms 2008:62–63). It correlates to the end of the Pre-Mazama Lunette Period (Jenkins et al. 2004), the entirety of the Post-Mazama Lunette and the Bergen Periods (Jenkins et al. 2004), and the beginnings of the Late Holocene. The Early Archaic (9,500 to 4,000 BP) is broadly associated with the Altithermal climatic event, an approximately 4,000-year-long period of relatively hot and arid conditions over the western U.S. (Barnosky et al. 1987; Davis et al. 1986; Dort 1968; Plew 2008:47; Swanson 1972). During this time, conditions on the Snake River Plain became warmer and drier, resulting in changes in subsistence strategies. The area surrounding the Snake River corridor at the southern end of the project area experienced geological changes as a result of climate shifts with frequent rock falls and mud slides. This, in conjunction with subsequent displaced sediment loads, made the area generally unstable to live in until after the Altithermal event (Bently 1983). Like the Pre-Archaic occupants of the Snake River Plain, the Archaic inhabitants appear to have depended on large game as a principal food resource (Butler 1986a; Swanson 1972); however, stone tool technology continued to evolve toward stemmed and notched projectile point styles indicative of increasing focus on hunting small game.

Northern Great Basin Early Archaic Sub-Period

The Early Archaic in the Great Basin dates from 9,500 BP to 4,000 BP and is encompassed by the Lunette Lake Period of the Fort Rock Basin chronology. It marks the transition from Plano to Archaic technology and represents substantial changes in subsistence and material culture (Plew 2008:48). The climate during the Middle Holocene experienced more extreme variability with cooler and warmer periods than that of present day; torrential storms likely occurred during the summer months (Simms 2008:77). Pluvial lakes experienced wide ranging fluctuations in depths and shorelines while piñon pine, juniper, and hybrid scrub oak began to expand across the Great Basin, soon to be followed by the establishment of modern flora and fauna.

Hunting technology during this time is characterized by the manufacture of lanceolate and large corner-notched projectile points developed for use with the atlatl. Early Archaic point styles are commonly referred to as Northern Side-notched (Bitterroot) and stemmed-indented base Pinto series points. These point types have been discovered at the Wasden site (Dort and Miller 1977), Wilson Butte Cave (Gruhn 1961a), and more recently at the Idaho National Engineering and Environmental (INEEL) complex in the high desert of eastern Idaho (Reed et al. 1986; Ringe 1995).

Other Early Archaic sites found on the Snake River Plain include the Bison and Veratic rockshelters in the Birch Creek region (Swanson 1972); Weston Canyon (S. Miller 1972) in the eastern Snake River Plain; the Rock Creek site (Green 1972) south of Twin Falls in the central Snake River Plain; Bachman Cave (Metzler 1978) near Oreana; the Braden Burial Site (Butler 1980; Harten 1980) and the Hetrick site (Rudolph 1995) near Weiser, Idaho. Notable Early Archaic sites in Oregon include the Locality III Site, Birch Creek Site, the Bowling Dune, Nightfire Island, and Malheur Lake (Aikens et al. 2011).

Although not specifically attributed to Oregon, the Western Idaho Archaic Burial Complex, dated to about 6,000 to 4,000 BP (Pavesic 1983, 2000), has been documented in the Snake River Plain in western Idaho and likely influenced behaviors in adjacent areas. This burial pattern includes interments separate from habitations along high sandy knolls overlooking streams, evidence of ritual treatment of the dead, and distinctive special use artifacts. Burial goods often include large bifaces, including the distinctive "Turkey Tail" style projectile point, obsidian preforms, and red ochre (Butler 1980; Harten 1980; Plew 2008:). One discovery of volcanic tuff pipes included in the burial assemblage has also been documented (Pavesic 2000). Sites with similar burials have been found in the Blue Mountains and in the area of the Stockoff Quarry in northeast Oregon, but researchers have not explicitly associated these sites with the Burial Complex.

Northern Great Basin Middle Archaic Sub-Period

The Middle Archaic sub-period dates from 4,000 to 1,250 BP in the Great Basin and encompasses much of the Fort Rock Basin chronology's Bergen Period and the beginning of the Boulder Village Period. Climatic conditions during this time are believed to have become more mesic, with wetter and cooler conditions prevailing. Conditions were similar to those of the present and essentially modern flora and fauna characterized the area, as evidenced in archaeological assemblages dating to this time period. The climate does not appear to have been static, however. Geomorphic evidence indicates that episodes of sand dune activation and dormancy occurred throughout the Middle Archaic and well into the Late Archaic, suggesting that fluctuations in moisture occurred. Both open and sheltered sites are present in riverine, foothill, and upland settings (Plew 2008:67), and certain localities appear to have been occupied repeatedly by small hunter-gatherer bands. Many Middle Archaic sites are overlain by substantial Late Archaic deposits, and, in some cases, Late Pre-Contact deposits.

The hunting technology of the Middle Archaic is characterized by increased variability in projectile point styles that include large side-notched, Humboldt series concave-base points, Elko series points, Pinto series points, and Eastgate series points. Evidence from the Givens Hot Springs area in southwestern Idaho, near the southern end of the project, indicates that large semi-subterranean houses were being built by about 4,300 BP (T.J. Green 1982). Butler (1978) has noted the appearance of earth ovens during the early part of the Middle Archaic in the Snake River Plain. Hunter-gatherer subsistence and settlement strategies continued throughout the later Middle Archaic (Gruhn 1961a; Swanson 1972; Swanson et al. 1964), but by 3,000 BP the archaeological record shows a decrease in projectile point neck widths among artifact assemblages. This may suggest an earlier introduction of the bow and arrow than in other regions (Franzen 1981), or it may merely reflect the use of smaller dart shafts.

Significant Middle Archaic sites include Bobcat Cave (Henrikson 1996, 2003, 2005) and the Wasden Site (Butler 1978) in the eastern Snake River Plain; Rock Creek (Green 1972) and Wilson Butte (Miller 1972) in the central Snake River Plain; and Givens Hot Springs (Green 1993) and Dry Creek (Webster 1978) in the western Snake River Plain. The Map Rock Petroglyphs Historic District, within the Givens Hot Springs area, contains 20 etched volcanic boulders containing numerous different designs (Davis and Swanson n.d.).

Northern Great Basin Late Archaic Sub-Period

The Late Archaic sub-period in the Great Basin dates from 1,250 BP to historic contact and is encompassed by the Boulder Village Period of the Fort Rock Basin chronology. This sub-period is characterized by changes in material culture that include the proliferation of the bow and arrow and adoption of ceramic technology (Plew 2008). The climate during the Late Archaic experienced a return to Pleistocene-like conditions, but with modern flora and fauna. The winter months were wetter and the summers cloudier and cooler, allowing for expansion of glaciers along Great Basin mountain ranges. The Great Salt Lake and Pyramid Lake rose due to the lack of evaporation and decreasing temperatures. Wetlands developed in the high desert regions (Simms 2008). Small corner- and side-notched projectile points in the form of Desert Side-notched and Rosegate points replaced the large side-notched and Humboldt concave-base points of the Middle Archaic period. Hunting was still the primary means of subsistence, but strategies changed to incorporate buffalo jumps, game drives, and a heavier reliance on smaller game and fish to support the needs of growing populations. The population of the Snake River Plain expanded during this time of economic diversity and several settlement-subsistence systems developed. Gould and Plew (1988) describe diversifying economic strategies that eventually resulted in some groups refining their subsistence practices and focusing on a single resource, such as salmon fishing.

The archaeological evidence of fish caches and bison jumps for bulk food procurement, accompanied by the employment of diverse subsistence practices focusing on specific resources, suggests that people were becoming more sedentary during the Late Archaic. In addition to the changes in material culture and lithic technology, rock art in the form of petroglyphs and pictographs executed in a Shoshone style appears along the Snake River, possibly marking hunting and shamanistic sites (Plew 2008).

A few sites from this short 1,000-year time period have been identified in Oregon, including the Warner Valley sites, Indian Grade Spring, and the North Ontario Interchange sites. The North Ontario Interchange sites are the closest to the B2H Project area and located at the confluence of the Snake and Malheur rivers near the southern end of the project. These two sites provide evidence that spawning Chinook salmon and fresh water mussels were collected and roasted there sometime between about 3,100 and 2,600 cal. BP, with minor subsequent visits occurring as late as 1,530 cal. BP. Other artifacts present in the assemblage included obsidian bifaces, a small amount of groundstone, hammerstones, shell and bone beads, and debitage. Projectile points at the sites are almost exclusively limited to obsidian Elko points. Obsidian sourcing studies indicate the tool materials came from several distant sources including Gregory Creek to the west, Coyote Wells to the southwest, Timber Butte to the east, and Nevada to the south (Aikens et al. 2011).

Northern Great Basin Late Pre-Contact Period

The Late Pre-contact period can be represented by the end of Jennings' (1986) Late Archaic Period. It is attributed to the time period between 2,000 and 650 BP in the northern Great Basin and is also encompassed by the Boulder Village Period of the Fort Rock Basin chronology. The time period is characterized by the increased production of bow and arrow type projectile points, bulk food procurement, expansive material trade, and continued development of ceramic technology. This period was characterized by gradual warming until 1,050 BP when the speed of such warming increased, accompanied by summer rainfall. Beginning in 950 BP, decades of severe drought occurred which were subsequently followed by abundant precipitation (Simms 2008:77).

Two distinctive sets of cultural manifestations have generally been identified during the Late Pre-contact Period: the Fremont and the Numic or Shoshone. Although readily identified in the eastern Great Basin, there is no evidence of the Fremont tradition in Oregon. The "Numic Expansion" witnessed the movement of Western Shoshone and Southern Paiute groups into most of the Great Basin during the Late Pre-contact Period. Numic peoples spread eastward from a homeland in the southwestern Great Basin, either from Death Valley (Lamb 1958) or Owens Valley (Bettinger and Baumhoff 1982). While there is little doubt that this spread occurred, its nature and timing are debated.

The introduction of ceramics associated with historically known Shoshone speakers and small notched projectile points, such as the Rose Spring, Eastgate, and Desert Side-Notched point types, marks the beginning of the Late Pre-contact period (Aikens et al. 2011:47). Hunter-gatherer subsistence strategies continued to be practiced during this time, but the increased number of sites in the archaeological record suggests that population density as well as the degree of sedentism continued to increase (Franzen 1981:225).Lithic technology of the Late Pre-contact period shifted from the production of dart-style points made from quarried materials to arrow -style points and other flake stone tools made from locally available raw material. Plant processing became more abundant and widespread.

Numerous Late Pre-Contact Period sites have been identified in Oregon, including Boulder Village, Drews Valley, Mortar Riddle, McCoy Creek, Lost Dune, Laurie's Site, Broken Arrow, Indian Grade Spring, the Knoll Site, and Hines (Aikens et al. 2011). The McCoy Creek site is one of sites closer to the project, located near Malheur Lake. Excavations at the site have identified overlapping house floors, a complex of two hearths, two storage pits, and concentrations of groundstone. Radiocarbon dates place the site between 1850 and 950 cal. BP, squarely within the Late Pre-Contact Period. A later date of 540 cal. BP from a separate house floor indicates that the site continued to be occupied during the Historic Period. Elko and Gatecliff points are associated with the earlier occupation, while a wider variety including Desert Side-Notched, Cottonwood Triangular, and small pin-stem corner-notched points similar to those found in the Columbia Plateau are associated with the later occupation. The faunal assemblage indicates site occupants made use of all nearby major habitats including marsh, lake, stream, and upland environs. The earlier occupation strongly focused on fish and fur-bearing mammals while the later occupation focused on large game, a pattern which reflects the environmental changes experienced during this time period (Aikens et al. 2011).

Sites that are associated with prehistoric use of the land in the project area include lithic scatters, camps and habitation areas, quarries, petroglyphs, rock alignments, and cairns.

HISTORIC-PERIOD OVERVIEW

EARLY HISTORIC CONTACT WITH AMERICAN INDIAN TRIBES

In the first decade of the nineteenth century, members of the Corps of Discovery, led by Captain Meriwether Lewis and Second Lieutenant William Clark, were the first Euro-Americans to document navigation of the northwest region by traveling up the Missouri and Columbia rivers (Walker and

Sprague 1998). When word of the region's resources spread, trappers and traders quickly organized to exploit them.

The fur trade followed closely on the heels of the early explorers, with the Hudson's Bay Company and Northwest Fur Companies vying for territory and otter and beaver pelts (Walker and Sprague 1998:142). Native people traded beaver pelts for domestic goods, weapons, and ammunition (Stern 1998:412). By the mid-1840s, overtrapping eliminated the beaver from much of its range in the Plateau and Great Basin causing trappers to gradually leave the country (Beal and Wells 1959).

Early interactions between native peoples and Euro-American travelers were peaceful, although strained. The rapid influx of emigrants in the mid-nineteenth century and the associated depletion of natural resources brought about strife between the Euro-Americans and the American Indians. Game and wood resources were becoming depleted as American Indians were forced to share resources with Euro-Americans migrating westward. Competition for fuel and fodder and damage to the grasslands and water sources from thousands of wagon wheels threatened traditional American Indian lifeways and led to growing dissatisfaction and mistrust among the American Indian tribes, resulting in armed skirmishes and livestock theft (Ruby and Brown 1972:179). Subsequently, hostilities between American Indians and new emigrants increased as a number of altercations, led by both American Indians and United States military cavalry, occurred (Sudweeks 1941). Hostilities between the Indians and the Euro-American emigrants ran high in the 1850s, in part stemming from conflicts resulting in the deaths of 11 missionaries at the Whitman mission near Walla Walla in 1847 (Walker and Sprague 1998:144-146). Five Cayuse were eventually tried, convicted, and hanged for the murders, which subsequently ignited the Cayuse War of 1848. The war continued with sporadic fighting into the 1850s as native peoples in the Columbia Plateau increasingly were displaced from their homes under constant pressure from settlers and speculators (Walker and Sprague 1998).

Concurrent with unauthorized settlement, or "squatting," by Euro-Americans, agents of the U.S. government formally surveyed Indian lands for division and sale to immigrants and miners. Oregon Superintendent for Indian Affairs Joel Palmer formulated plans to relocate tribes to reservations and Washington Territory governor Isaac Stevens, accompanied by a military entourage, met with Plateau tribes in 1855 to negotiate treaties. The Walla Walla, Umatilla, and Cayuse tribes ceded 6.4 million acres to the United States, but they reserved rights for fishing, hunting, gathering foods and medicines, and pasturing livestock. 510,000 acres were set aside as lands of the Confederated Tribes of the Umatilla Indian Reservation. The Yakama and Nez Perce Indian reservations were created at this time as well (Ruby and Brown 1972:189-204).

On July 1, 1868, the Bannocks and Paiute also signed a treaty, providing for resettlement on reservation lands (Michno 2003). The Bannock War of 1878 erupted when settlers living near Camas Prairie in south-central Idaho allowed their livestock to root up the wet camas meadows, a chief source of subsistence for the tribes. Bannocks and Paiutes, furious at the destruction of an important food source, began threatening settlers. Government troops were again mobilized out of Fort Boise, pursuing the Indians through southern Idaho and southeastern Oregon (Michno 2003).

Essentially all of the project area in southwestern Idaho and northeastern Oregon was contested land during the turmoil of the 1860s, 1870s, and 1880s. Because of increasing hostilities between Indians and settlers, the U.S. government ordered that all Indians in surrounding regions were to be rounded up and held forcibly. Over the winter of 1878–1879 approximately 550 to 650 Paiutes were ordered to walk under armed guard to Fort Simcoe, Washington, on the Yakama Reservation and Fort Vancouver in Washington. Many did not survive this experience (Michno 2003; Ruby and Brown 1981). While both Paiute chronicler Sarah Winnemucca Hopkins and U.S. Indian Agent W.V. Rinehart indicate that the general route taken by the captives trended north-south from Fort Harney to Fort Simcoe, government-to-government consultation with the Shoshone Paiute Tribes indicates that the route roughly followed the east-west geography of the Oregon Trail, traversing the B2H Project area. Although formal studies to identify segments of trail associated with this event have not been undertaken, the possibility that previously identified and unidentified trail segments are located in the B2H Project area should not be discounted. The legacy of what is often referred to as the “Forced March” and the “Paiute Trail of Tears” is still remembered by the Paiute who consider lands of the project area sacred to their culture.

Cultural resources that could be encountered along the Proposed Action and alternatives that reflect this early period of Native American and Euro-American contact include trapping and hunting camps, Native American habitation sites, hunting sites, artifact scatters and rock alignments, early homesteads, school houses, marked and unmarked graves, military forts, and Indian and emigrant trails.

Transportation

Roads and Trails

Indian Trails

Before Euro-American westward immigration, American Indians had established networks of trails to facilitate trade relationships and regional travel. Commodities such as marine shells, obsidian, camas, and salmon were carried many miles from their origins. Interregional exchange of goods bearing common social and ceremonial value was well organized throughout the continent (Swagerty 1986). Indian trails had a pronounced impact on the early European American history area. Native guides led explorers along them, traders built their posts beside them, and battles were fought near them. Some emigrant trails developed from Indian trails, although wagon traffic sometimes necessitated modifications to the routes (Blakeslee 1988). The route that became the Oregon NHT was to a significant degree, comprised of segments of hunting and migration trails actively used by Indians well into the nineteenth century.

Emigrant Trails

Early explorers devised routes that incorporated segments of early Indian trails accessible by wagon. In 1812, fur traders made an arduous 10-month journey from Fort Astoria, Oregon, to St. Louis, Missouri, along existing Indian trails and natural travel corridors, much of what would become the Oregon NHT (Dary 2005). Later groups of traders and trappers found an alternative route through South Pass, Wyoming that later made it possible for wagons to travel the trail (BLM 1986). Numerous wagon roads are depicted on historic maps and cross the Proposed Action and alternatives in multiple locations.

Several named roads that were likely based on early trails and wagon roads cross the Proposed Action and alternatives include: the Butler Creek Trail, Highway 95, Ontario to Burns Freight Road, Road from Baker City to Sparta, Road to Silver City, Uniontown Road, Quartz Mill Road, Sparta Road, Road from Walla Walla to Boise, and the Road from Baker to Boise all cross the Proposed Action; the Auburn to Burnt River Road crosses the Flagstaff Alternative; the Road from Baker to Boise and the Rye Valley Road cross the Burnt Mountain Alternative, the Road from Watson to Nyssa and the Road from Watson to Vale cross both the Malheur A and Malheur S alternatives; and the Union to Sparta Road crosses the Timber Canyon Alternative. The Indian Service Road was constructed in 1861-1862 in an effort to avoid travel on the Oregon NHT within the newly created Indian reservation (Miller 1996; Tucker n.d., Pilot Rock Emigrant Road). As there was no planned maintenance of this road, it fell into disrepair.

Several roads and trails are of special significance to the history of the area and are either listed or have been determined eligible for listing in the NRHP. Additionally, the Poison Creek Stage Station is located in the analysis area of the Proposed Action in Idaho. The Station contains a house, barn, two root cellars, a schoolhouse, chicken coop, and an outhouse (source: NRHP form, 1978.) This property was constructed in 1886 as a way station for the Jordan Valley-Caldwell stage line and was listed in the NRHP in 1978.

Oregon National Historic Trail (NHT)

The web of pathways that became known as the Oregon NHT was actually a network of trail segments, river crossings, and landmarks that stretched across 1,800 miles of territory and linked the western frontier to the settled lands of the east. Many components of this historic trail have been congressionally designated as NHTs and are part of the National Trails System. Interconnecting with these transcontinental trails are regional and local historic stage and freight roads. Portions of the Oregon National Historic Trail cross the Proposed Action and the Burnt River Mountain, the Flagstaff, Glass Hill, Horn Butte, Longhorn, Timber Canyon, Tub Mountain South alternatives.

The principal route of migration westerly across southern Idaho to Oregon was via the Oregon NHT. It was originally established by Indians and only later refined by the early Euro-American explorers and fur trappers including members of the Astor expedition of 1811 to 1812 and John C. Frémont in 1843. The first wave of migration came during the 1830s as Protestant missionaries journeyed west to convert the native populations (Hutchinson and Jones 1993). The first true emigrant wagon train arrived in southeastern Idaho in 1841 and was conducted by the Bidwell-Bartleson party. Thirty-four members of the Bidwell-Bartleson party continued west accompanying missionaries along what would eventually become the Oregon NHT. Shortly after the Bidwell-Bartleson party, Captain John C. Frémont explored the region during his travels as part of a federal expedition and published accounts that became the trail guides for subsequent emigrants along the Oregon NHT (Hutchinson and Jones 1993). By the mid-1840s, the Oregon NHT became a major, nationally recognized thoroughfare for emigrants making their way west.

Portions of the Oregon NHT continued to be used into the late 1890s, but the trail saw a decline once the transcontinental railroad—which provided faster, safer, and, usually, cheaper travel east and west—was completed in 1869. Many well-traveled segments of the Oregon Trail were converted to modern highways and railroad segments, including several segments of Interstate 84 (I-84) in Idaho and Oregon. Numerous markers and memorials have been erected at burial sites, springs, emigrant camps, and inscription sites along these segments. Several segments have been given discrete names, such as the California Gulch/Blue Mountain, Whiskey Creek, White Swan, Virtue Flat, Straw Ranch 1 and 2, Swayze Creek, Birch Creek, Tub Mountain, and Alkali Springs segments.

Segments of the Oregon Trail are located within the analysis area for the Proposed Action Corridor, as well as the Burn River Mountain Alternative, the Longview Variation, The Flagstaff Alternative, Glass Hill Alternative, Horn Butte Alternative, and Longhorn Alternative.

Meek Cutoff

The Meek Cutoff, which was blazed as another alternate route of the Oregon NHT in 1845, headed directly west from the Oregon NHT's junction with the Malheur River. The Meek Cutoff crosses the Proposed Action once. Stephen Meek, accompanied by 750–1,000 emigrants, approximately 200 wagons, and heads of livestock, set out across the Malheur River convinced that they could connect a route through central Oregon, over the Cascades, and into the Willamette Valley. Meek led the wagon train along the rocky banks of the Malheur River, then up and over steep rocky bluffs. The oxen-driven wagons and travel-weary emigrants experienced a difficult time along the route (Beckham 1991).

Water and forage for draft animals became scare along the journey and many of the emigrants felt that Meek had misled them and were desperate to head upriver along the Deschutes River toward The Dalles, while others desired a more direct route over the Cascade Mountains. The wagon train split just south of the Maury Mountains, near Lost Hollow, with one group travelling northwest toward the Deschutes River, while another group travelled north toward the Columbia River. After 10 days apart, the two groups arrived separately at Sagebrush Springs. It took two weeks to move all of the wagons, livestock, and 200 families across the Deschutes River with the assistance of local Indians. Meek and the remaining emigrants reached The Dalles having lost at least 23 members to disease and hunger along the way. Segments of the Meek Cutoff are located in the analysis area for the Malheur S Alternative of Segment 5 of the B2H Project.

Goodale's Cutoff

The Goodale's Cutoff to the Oregon Trail had its origins as a migration route used by Shoshone peoples and was popularized as an alternate route of the Oregon Trail by John Jeffrey, a river ferry operator, as early as 1852 (NPS n.d.). This cutoff trail left the main Oregon Trail at Fort Hall, Idaho proceeding northwest to the landmark Big Southern Butte and then reaching as far north as modern-day Arco, before turning southwest through what is now Craters of the Moon National Monument and proceeding west through the Camas Prairie and intersecting the Main Oregon Trail Route south of Boise (NPS n.d.). Widespread EuroAmerican immigration on the trail dates to 1862 when a party of over 1,000 emigrants hired guide Tim Goodale to lead them on the passage From Fort Hall to Fort Boise. As hostilities increased between Shoshone and Bannock peoples and the emigrants along the main Oregon Trail, larger numbers of people began to use Goodale's alternate route (Dary 2004). The discovery of Gold in the Boise Basin further contributed to the increase of EuroAmerican use of this route (NRHP nomination 1972).

A northern alternate of Goodale's Cutoff continued from Boise north to the Brownlee Ferry crossing of the Snake River in Hells Canyon (McGill 2006a). The road out of the canyon has been described as a "zigzag road" which traversed the steep incline of the river bank leading to Pine, Oregon (McGill 2006). The trail then followed a westward alignment to Richland, Oregon and crossed the Powder River following a southern alignment to Ruckles Creek and continued along the creek to Flagstaff Hill (McGill 2006a). This alternative was purportedly used by prospectors, including prospector George Grimes, who used the route to traverse between the Boise Basin mines and Walla Walla (Wells 1972).

Two segments of the Goodale's Cutoff are located in the analysis area for the Timber Canyon Alternative in Segment 3 of the B2H Project.

Dalles Military Wagon Road

After the regional discovery of gold in 1861, the road from The Dalles to Canyon City became a major transportation route and was used to haul people and supplies to the gold fields. A parallel road, using much the same route as The Dalles to Canyon City Road, was surveyed between 1864 and 1867 by Major Enoch Steen (Preston 1972). In 1869, it was designated the Dalles Military Road, which continued east from Canyon City to Idaho, linking The Dalles to Fort Boise, crossing the Oregon NHT near Malheur River, south of Farewell Bend. The Dalles Military Wagon Road crosses the Proposed Action, the Tub Mountain South Alternative, and the Willow Creek Alternative.

The Lewis and Clark National Historic Trail (NHT)

Although not an emigrant trail, the Lewis and Clark NHT is located in the analysis area for the Longhorn and Longhorn Variation Alternatives in Segment 1 of the B2H Project, and is studied as a cultural resource. The almost 3,700 mile long Lewis and Clark NHT commemorates the route taken by the Corps of Discovery in 1803-1806 and largely follows the Missouri and Columbia Rivers. The portion of the NHT in the analysis area is located immediately across the Oregon-Washington border on the northern side of the Columbia River.

Railroads

In 1879, Henry Villard became a major force in Oregon railroading when he purchased the Oregon Steam Navigation Company and the Oregon Steamship Company, merged them with his interests in the Oregon and California Railroad and created the Oregon Railway and Navigation Company (OR&N). In that year, the Union Pacific and Henry Villard agreed to connect the rails of the OR&N with those of the Union Pacific transcontinental mainline at Granger, Wyoming, in order to create a direct line to the Pacific coast. In 1881, Union Pacific incorporated the Oregon Short Line (OSL), to develop a connecting line between Granger, Wyoming, and the Baker City, Oregon are where the OR&N was extending its own line. The OR&N reached Pendleton, Oregon, on August 31, 1882, and Baker City, Oregon, in August 1884. The final spike connecting the two railroads was driven at Huntington, Oregon, on November 25, 1884. The OSL acquired control of the OR&N in 1887, and with that the Union Pacific had a through route to the Pacific Ocean. The OR&N lines were leased to Union Pacific's OSL from 1887 until Union Pacific purchased OR&N in 1889 (Deumling 1972).

In 1893, following a national economic panic, the Union Pacific was forced into bankruptcy along with its subsidiary railroad companies. The OR&N was taken into receivership at this time. In 1896, a new Oregon Railroad and Navigation Company was incorporated to take over operation of the OR&N. The Union Pacific, under new management after the financial disaster of 1893, was left with a transcontinental railroad that ended at the Great Salt Lake, where it connected with other railroads. The OSL emerged from the bankruptcy in 1897 as an independent company until it was again leased by the Union Pacific in 1899 (Robertson 1995:219). By 1900, the new Oregon Railroad & Navigation Company became a subsidiary of the Union Pacific (Laubaugh 2012).

In the early 1900s, the Union Pacific constructed new lines in places, and gained additional operating agreements. By January 1910, its service had expanded to include Seattle. It was during this period that the company was incorporated as the Oregon-Washington Railroad & Navigation Company. In December of that year, the OWR&N acquired all the assets, liabilities, and operations of the smaller companies (Laubaugh 2012).

Construction of a branch line from Ontario to Burns, Oregon, had been started in 1913 and finally completed by 1925. From the 1930s through the 1960s, the railroad's main line was rebuilt to accommodate the various river dam projects constructed on the Snake and Columbia rivers. Overtime, the OWR&N name fell into disuse as most people identified the railways with the Union Pacific company largely due to the diesel locomotives being labeled and painted with the Union Pacific colors and emblems (Laubaugh 2012).

Logging Railroads

On June 30, 1890, the independent Sumpter Valley Railroad was incorporated in Oregon by David Eccles and four other partners to haul logs to a new sawmill being built for the Oregon Lumber Company in South Baker City. Work began immediately to lay track from South Baker to the timberlands along Sumpter Valley. By March 1892, the railroad reached the stage stop of McEwen 22 miles west of Baker City. The railroad began at once offering passenger and freight service to McEwen in addition to hauling logs to the Oregon Lumber Company mill (Robertson 1995:146–147).

By the 1920s, the railroad began losing passenger and freight business to automobiles and trucks. This decline eventually resulted in the abandoning of 20 miles of main line between Prairie City and Bates in 1933. Scheduled passenger service was discontinued entirely in 1937, though mail and occasionally passengers continued to be carried in the cabooses of freight trains until the railroad ceased operation completely. Finally in 1947, the railroad ceased all operations except for 1.5 miles of dual-gauge track at the Oregon Lumber Company yard in South Baker (Robertson 1995:146–147). A diesel switch engine operated at the lumber yard until December 1961 when the last tracks were razed. During its 57-year history from 1890 to 1947, the Sumpter Valley Railway was a vital part of the Eastern Oregon region it served and was one of the longest used narrow gauge railroads in the western United States.

The Mount Emily Lumber Company, founded in 1924, constructed some 40 miles of railroad line in the La Grande area, connecting to the Union Pacific mainline 8 miles west of town. The company largely switched from rail logging to truck logging in 1930, but the Mount Emily mainline continued in use until 1955 (Taubeneck 2000).

A segment of the Oregon Railroad and Navigation Company (OR&N) Railroad, the Mount Emily Railroad, and several unnamed railroad grades cross the Proposed Action. The Mount Emily railroad and unnamed railroad grades cross the Glass Hill Alternative, a segment of the OR&N is within the Horn Butte Alternative corridor, as well as the Longhorn Alternative, and unnamed railroad grades cross the Longhorn Alternative and the Longhorn Variation. Railroad related properties that could be located within the project area include bridges, including small-scale culverts, tunnels, line segments, and abandoned railroad beds, among others.

Energy Exploration/Resource Extraction

Mining

Gold Mining

Idaho Operations

The majority of gold mining operations in Idaho's Owyhee County were located in the Silver City mining district in the northwestern part of the county, with placer mining operations conducted along the Snake River. The Silver City mining district included the De Lamar, Flint, and Florida Mountain-War Eagle Mountain camps in northwestern Owyhee County. Between 1863 and 1865, more than 250 mines operated in the district. By the time the rich oxidized ore deposits were nearly exhausted in the early 1870s, the district had produced $12.5 million in gold and silver (Koschmann and Bergendahl 1968; Piper and Laney 1926).

The second wave of mining in the Silver City area began following gold discoveries at the Black Jack mine on Florida Mountain and the De Lamar mine at Wagontown in 1889. This second boom proved to be larger in scale than the first and by 1914 the district had produced $23 million in precious metals before the ore resources were exhausted (Koschmann and Bergendahl 1968; Piper and Laney 1926). Currently, no major mines are operating in the district.

Oregon Operations

Approximately three-fourths of Oregon’s gold production centered on the Blue Mountains in a region referred to as the “Gold Belt of the Blue Mountains” (Brooks and Ramp 1968:41). The belt, approximately 50 miles (80 kilometers [km]) wide by 100 miles (160 km) long, extends from the John Day River in the west to the Snake River in the east. Of particular relevance to the project, because of their proximity, are the Baker, Lower Burnt Valley, Mormon Basin, Sparta, and Virtue mining districts.

The Baker District, located about 6 miles northwest of Baker City, produced over 37,000 ounces of gold, half of which came from placer mines (Oregon Gold 2012a). Spurred on by the initial gold discovery on Griffin’s Gulch in 1861, beginning in 1862 prospectors roamed the Powder and Burnt River areas, finding gold in a great many creeks and gulches (Gilluly et al. 1933:24; Hiatt 1893:33). The Dale Mine, located southwest of Baker City, produced free-milling gold. Placer mines were established at the southern end of Elkhorn Ridge, as well as west of Baker, Salmon, and Marble creeks. Lode mining produced gold in the upper Washington Gulch area and the McCord Gulch area (Gilluly et al. 1933:81-83). Another prosperous mining region in Baker County was the Poorman-Balm Creek mines of the Mother Lode mining group which were located at the confluence of Slide Creek and Balm Creek approximately 20 miles northeast of Baker City and 6 miles from the town of Keating (Allen 2005).

The Lower Burnt Valley District, which includes the former Gold Hill District (Gilluly et al. 1933:54), encompasses the Weatherby, Gold Hill, Durkee, Chicken Creek, and Pleasant Valley areas, is located along the Burnt River in southern Baker County. Placer mines in this district were worked in the early 1860s, followed by lode mines in the 1880s. Gold was readily available in Burnt River tributary streams and gulches, with Shirttail Creek an especially rich source. The neighboring Weatherby area, about 10 miles southeast of Durkee, contained important placer and lodes mines, particularly along Chicken and Sisley creeks (Eastern Oregon Mining Association 2012a).

The Mormon Basin (Dixie Creek, Rye Valley, and Malheur) District lies in southern Baker County and northern Malheur County. Placer deposits were first discovered in Malheur in the Mormon Basin in 1862 (Malheur County Historical Society 1988). Placers were mined as early as 1863 in the Rye Valley area and were credited with a production of $1 million of gold (Eastern Oregon Mining Association 2012a). Rainbow Mine, discovered in 1901, was the largest gold producer, and from 1913 to 1915, it was the most productive lode mine in the state (Gilluly et al. 1933). The district was most active before 1915, with production dwindling between 1915 and 1949, after which mining production fell idle.

The Sparta District lies roughly 27 miles east-northeast of Baker City, from the southern foothills of the Wallowa Range following drainages along the Powder River. Placers were worked early in the 1860s and, after 1873, were supplied with water by the Sparta Ditch. The Sparta District was also extensively mined for lode deposits, especially around Eagle Creek (Gilluly et al. 1933). The district declined rapidly after 1892 and it was idle from 1952 through 1959. Total production from the district through 1959 was 35,200 ounces of lode gold and 7,700 ounces of placer gold (Eastern Oregon Mining Association 2012a).

The Virtue District, located about four miles east of Baker City, was the scene of intensive placer and lode mining. The Union or Rockafellow Mine was established in 1862 and then sold to Col. J. Ruckel in 1864. Needing a reliable water source to process his ore, Ruckel built a 10-stamp ore-processing mill on the Powder River at the site of what would become Baker City (Jacoby 2007). Baker City grew rapidly and a formal townsite was laid out in 1865. Also referred to as the "Queen City of the Mines," the settlement became a commercial and financial center for the surrounding mining districts (Potter 1995:95). Ruckel sold his mining claim to James W. Virtue and A.H. Brown in 1868, which gave rise to not the area’s current name and the Virtue Mine. Located at the southern end of Virtue Flat, this lode mine, which was worked into the 1920s, was one of the largest producers in Oregon yielding some $2.2 million of gold. Other important mines included the Brazos, Carroll B., Chicago-Virtue, Cliff, Flagstaff, Koehler, Norwood, and White Swan (Eastern Oregon Mining Association 2012a; Gilluly et al. 1933: 73). Many prospect adits and pits scattered across the district attest to the intensity of mining in the area. Total gold production within the Virtue District through 1959 was 126,000 ounces of lode and placer gold (Eastern Oregon Mining Association 2012a).

Even though it was against the law to stake their own claims, Chinese immigrants purchased and re-worked abandoned claims from Euro-American miners. The remains of “Chinese Walls,” hand-stacked as workers progressed along the placers, are found in the local Baker County area (Wegars 1995). Mining by Chinese emigrants also ceased once the ore resources in the region were completely exhausted.

Non-Gold Bearing Mining

Although gold was the principal mineral mined in eastern Oregon and southeastern Idaho during the nineteenth and twentieth centuries, other non-gold bearing mineral commodities were also prospected within Baker and Malheur counties. Most non-gold bearing minerals were first quarried during the early twentieth century. Unlike gold-bearing mining in the region, however, heightened activities continued in some areas during and after the World War II period. Minerals prospected in the Baker and Malheur county area included limestone, granite, coal, manganese, uranium, calcite, pumice, and asbestos. Of these minerals, limestone proved to be the most economically significant.

The Marble Creek area of Baker County was mined for limestone, beginning with a patented claim in 1893 to the Monarch Marble Mine. From 1892 to 1900, some 6,000 tons of limestone from this mine were squared and burned for use in the Baker area. Activity ceased after 1900, with exploration work resuming in 1948 through the Marble Creek Limestone quarry (Wagner 1949). Work continued until 1963, when the Marble Creek quarry was closed and the neighboring Baboon Creek limestone quarry was developed and operated by the Chemical Line Company. The Baboon Creek quarry operated from 1958 to 1971 when the plant and quarries closed (The Record-Courier 1995).

In 1907, a lime kiln operated in the vicinity of Lime, Oregon (Prescott 1937) and in 1916 the Acme Cement Plaster Company built a plant at Lime to produce plaster. In November 1923, the Sun Portland Cement Company built a cement plant in Lime to serve western Idaho, eastern Oregon, and southwestern Washington (McCaslin 1965). Because of overlapping stockholders, the "Sun" company and the "Oregon" Portland Cement Company merged in September 1926, becoming the Oregon Portland Cement Company (McCaslin 1965). By the 1960s, the Lime facility produced 1,200,000 barrels of cement year. As the nearby limestone deposits were depleted, limestone was brought from the Nelson area, near Durkee, Oregon. A new plant was built at Nelson in 1979 and the facility at Lime was closed in 1980. The ruins of the limestone plant are still present today. The Western Lime Quarry, located 3.5 miles southeast of Durkee, in the Burnt River Canyon, consisted of 24 placer claims (Prescott 1937).

No mines are located within the 500-foot-wide corridor centered on the Proposed Action and alternatives. However, the Rachel, Cliff, Cyclone, Flagstaff Hill, and Grey Eagle mines are located within the 4-mile-wide corridor centered on the Flagstaff Alternative, and the Rachel, Cliff, Columbia, Con-Virginia, Cyclone, Emma, Flagstaff Hill, Grey Eagle, Hidden Treasure, St. Paul, and Virtue Flat mines are located within the 4-mile-wide corridor centered on the Proposed Action. The Lode Mine is located within the larger 10-mile-wide corridor along the Timber Canyon Alternative. The Baker City Historic District, an NRHP listed historic district comprised of both commercial and residential properties associated with regional mining operations, is located within the 10-mile-wide study corridor for indirect impacts along the Flagstaff Alternative. Approximately half the buildings were built between 1870 and 1915. One of the more notable structures is the Baker City Tower, which began as the Baker

Community Hotel in 1929. It remains the tallest structure in Baker City and is an excellent example of Art Deco architecture (Engeman 2005). The Baker City Historic District was listed in the NRHP in 1978.

The NRHP-listed Bernard's Ferry is also located in the analysis area for the Proposed Action for the B2H Project. Established in 1882 by J.C. Bernard, the ferry provided an important transportation linkage between the communities of Nampa and Caldwell and the mines at Silver City. It was in operation until 1920, when establishment of a bridge at Walter's Ferry obviated the need for river transportation. The remaining barn and associated structures were listed in the NRHP in 1978 (NRHP form 1978). The will be further analyzed through the ILS.

Although remnants of the "Chinese Walls" associated with the work of Chinese miners in eastern Oregon have not been identified within the analysis area for the B2H Project, RLS of the 10-mile-wide study corridor for indirect impacts has indicated the presence of a "Chinese House" in proximity to the Proposed Action. Additional types of mining related properties that could be located within the project area include claim markers, prospect pits, cairns, quarries, tunnels, camps, smelters, building foundations, railroads, and roads, among others.

Timber and Logging

Early settlers in eastern Oregon initially participated in logging to construct and maintain their farms and ranching practices; roads would also be constructed to transport felled timber to their properties (Tucker 1940:70). The earliest commercial timber harvesting efforts primarily supplied the mining industry. Into the latter part of the nineteenth century, timber began to be produced for local and increasingly regional consumption. However, with the construction of the OSL Railroad line in the 1880s, the industry gained access to national lumber markets and logging became an important economic driver for the region (Powell 2008a).

The timber industry experienced a downturn and financial stresses during the Great Depression, as the overall national decrease in development projects correspondingly decreased demand. However, with the onset of World War II, foreign and domestic demand increased and continued to do so well into the 1950s when the practice of second-growth timber harvesting began. The timber industry continued to play a major role in Oregon's economy during the second half of the twentieth century, and by 1960, represented one-fifth of the nation's domestic lumber supply (Andrews and Kutara 2005:1).

During the latter part of the twentieth century, mills became more permanent and lumber companies began to acquire their own land. The Oregon Lumber Company in Baker City, the Grande Ronde Lumber Company in La Grande, the Baker White Pine Lumber Company of Sumpter and Baker City, and the East Oregon Lumber Company in Enterprise are just several of the larger mills that developed in the region (Powell 2008a). Only recently has the industry experienced an extended decline in production and profit (Andrews and Kutara 2005:1, 7; Powell 2008a:2, 3).

Some of the historic mill locations within or near the project include mills at Dry Gulch, Government Springs, and the Grande Ronde River (Tucker 1940:77–79).Properties associated with timber and logging in the B2H project area could include temporary camp and work sites, railroad grades, splash dams, and spring board notch trees. Historic roads, such as the Quartz Mill Road on the Proposed Action, were used to transport wood and cut lumber.

Homesteading, Irrigation, and Agricultural Settlement

Idaho was largely settled by emigrants from other parts of the West who sought their fortune in gold or land. In reality, many of them ended up making a living as farmers or storekeepers during the Gold Rush years and stayed on to raise livestock and crops. Few people were initially drawn to Idaho for its land, much of which, especially on the Snake River Plain, appeared sterile and uninviting (Schwantes 1991:96). Once the Gold Rush went bust, many stayed and realized that crops would grow well on the sage-covered flats of the Snake River Plain, if water were available. The early twentieth century introduction of large-scale irrigation soon made it possible to settle and farm this area (Schwantes 1991:96-97).

However, ranching and agriculture have played a major role in the economic development of the Pacific Northwest and continue to do so today. The natural resources of eastern Oregon in particular lend themselves to these productive industries. The ongoing improvements of irrigation canals and dam construction in the early 1900s precipitated further economic development and settlement. Soon after, native vegetation began being replaced by irrigated croplands of grains, sugar beets, potatoes, and alfalfa, which resulted in a disruption of the natural hydrologic system (Franzen 1981:228). Federal construction, canal, and dam projects through the Civilian Conservation Corps and Work Projects Administration during the 1930s Depression era enabled the unemployed to find work and helped establish larger-scale irrigation in the agricultural regions of Idaho and Oregon. Many of the currently in-use canal headgates were constructed during this time.

Based partly on the mass development of agricultural lands during the early twentieth century and as a response to the environmental disturbances caused by overgrazing and deforestation, public lands in western Idaho and eastern Oregon were set aside. This resulted in land management by federal agencies such as the BLM and U.S. Department of Agriculture Forest Service (USFS; Franzen 1981:229). Though the economy has been affected by periodic droughts and depressions throughout the twentieth century, to date, western Idaho and southeastern Oregon retain their agricultural economy; sugar beets, potatoes, dairy farms, wood product processing plants, and feedlots continue to contribute to regional development.

Homesteading

While squatters on public lands gained the authority to purchase tracts of land of up to 160 acres from the federal government through the Preemption Act of 1841, it was the Homestead Act of 1862 that dramatically drove new settlement in the west and, more specifically to this discussion, in eastern Oregon. The Homestead Act provided a 160-acre tract of land to any U.S. citizen, or intended citizen, who had never borne arms against the U.S. government, provided that the claimant lived on the land for 5 years and improved it by building a 12-foot by 14-foot dwelling and commenced cultivation of crops. After the 5-year period, the homesteader could file for a deed of title by submitting proof of residency and land improvements and paying a nominal registration fee to the local land office. This system allowed citizens access to land without any upfront land purchase costs.

Following the Homestead Act, Congress passed the Timber Culture Act in March 1873 that authorized the grant of an additional 160 acres to a homesteader who agreed to plant trees on 40 acres of the allotted land and cultivate them for 10 years. The legislation allowed for land speculators to consolidate large landholdings. Subsequent amendments of the Act reduced the number of acres of tree planting to 10. The purpose of the act was to establish groves of trees in the hope that they would create a more humid climate that would provide better agricultural land, thus bringing more rainfall to the drought-stricken prairie. Additionally, the Act would provide a source of material for fencing, fuel, and building for newly arriving and existing settlers, and also provide another method by which additional land could be acquired by residents, often doubling the amount of land they could receive.

The Desert Land Act was passed by the U.S. Congress on March 3, 1877 and was intended to encourage and promote the economic development of the arid and semiarid public lands of the western states (BLM 2009). The act offered 640-acre tracts of land to an adult married couple who would pay $1.25 an acre and promise to develop and irrigate the land within 3 years; a single man would receive 320 acres for the same price. The conditions required that the applicant be a naturalized citizen, head of household, or male over the age of 21 who had never been an enemy or aided an enemy of the United States. At the time the claim was placed, the claimant was required to pay 25 cents per acre, with the remaining balance due within 2 years. Unlike the Homestead Act, the Desert Land Act did not include a requirement to construct a residence, but it did stipulate that title would only be transferred after 3 years if irrigation development was completed within that time.

In 1909, Congress passed the Enlarged Homestead Act, which raised the amount of land deeded to each homesteader from 160 to 320 acres (Gates 1968). The Act also stipulated that only nonmineral, nonirrigable, and nonmerchantable timber land could be acquired provided that at least 1/8 of the land be continuously cultivated for agricultural crops, with 5 years to make all necessary improvements. In 1912, Congress decided that 5 years was too long for the residential and agricultural requirement and passed the Three-Year Homestead Act (Meinig 1955).

Irrigation

Farming became the way of life in arid northeastern Oregon during the late 1800s, but the lack of adequate irrigation soon reduced agricultural productivity. Old mining ditches were put back to work to provide water for orchards, hayfields, row crops, and dairy cows (Braswell 1986). However, this opportunistic use of the old mining ditches faded as a more formal system of irrigation ditches developed. Vale area farmers even diverted part of the Malheur River in the 1880s with varying success to provide more water to the area's agricultural fields (Oregon Historical Society 2012c).

The Carey Act of 1894 allowed for private companies in the United States to construct irrigation systems in the western semi-arid states and profit from the sales of water. The Carey Act was enacted into law by Congress on August 18, 1894, and was intended to dispose of arid public land. The Act, managed by the U.S. General Land Office (GLO) under the supervision of the federal government, provided as much as one million acres of land for each western state, which was then regulated by each state, which determined who qualified as potential claimants and investors. In most of the western states, claimants had to pay an entry fee, plus a small amount for the land, and meet several guidelines. The Act was particularly successful in Idaho and Wyoming. In 1908 Idaho received an additional two million acres and Wyoming received an additional one million acres of land to develop under the Carey Act. Today, approximately 60 percent of the Carey Act lands irrigated in the U.S. are in Idaho. Examples of projects that benefitted from the Carey Act in Idaho include the Boise and Twin Falls projects (Pisani 2002).

Congressional passage of the Newlands Reclamation Act in 1902 heightened expectations that federal monies would be available to develop irrigation projects in Oregon's arid desert region. Toward this end, the U.S. Reclamation Service conducted a series of survey and investigations of the Malheur, Willow Creek, and Owyhee areas in eastern Oregon and the Umatilla area in the northeast (Oregon Historical Society 2012b). Within the Umatilla region, the federal government quickly funded the Hermiston Irrigation Project, a large-scale development to divert water from the Umatilla River to agricultural fields in northern Umatilla County. The project focused on construction of a 26-mile-long canal system that carried water to the 100-foot-high Cold Springs Dam, built between 1906 and 1908 on the Umatilla River. Below the dam, the water was dispersed to croplands through a series of pipes and canals. Local interest in water development continued to grow and in 1953, McNary Dam was completed on the Columbia River at Umatilla Rapids to serve both irrigation and navigation needs for this growing region.

In the late 1920s, the Reclamation Service initiated the Vale-Owyhee engineering project, part of the larger reclamation enterprises being developed along the Snake River. The project included construction of 417-foot-high Owyhee Dam (the highest dam west of the Mississippi at the time), a 3.5-mile-long diversion tunnel, 5 miles of additional tunnel, a 2.5-mile-long steel siphon, and 200 miles of canal (Oregon Historical Society 2012b). The dam, completed in 1932, began delivering water to farmers in 1935. By 1965, the Owyhee Project irrigated more than 111,000 acres and, in the 1970s, the value of crops irrigated with Owyhee water peaked at $50 million (Stene 1996).

The Owyhee Historic District was listed on the NRHP in 2010. The property is located within the study area for indirect effects for Segment 5, specifically the Malheur A and S Alternatives and adjacent portions of the Proposed Action, and will be further analyzed through the ILS. The Bureau of Reclamation constructed the McKay Dam, between 1923 and 1927 supply water to the Stanfield and Westland Irrigation Districts (BOR 2012). This earthfill structure is 165 feet high; it was modified in 1978–1979 to increase capacity and was instrumental in furthering the agriculture capabilities of the area.

Other cultural resources related to the context of irrigation that may be found in the B2H analysis area include ditches, dams, spillways, siphons, canals, headgates, historic fields, orchards, and homesteads, among others.

Ranching

The ranching industry provided several basic staples including beef, mutton and lamb, pork, chicken, milk, and cheese. Cattle and horses also provided the necessary power for plowing agricultural fields, pulling wagons and other machinery, and leather for clothing and other purposes. It has been postulated that Shoshone Indians brought the earliest horses to the northwest from Spanish Missions in northern New Mexico in the 1700s (Galbraith and Anderson 1991:213). Regardless of origin, ranchers and farmers who arrived in the region in the nineteenth century found domesticated horses necessary for conducting daily activities. Cattle were first introduced to the region at Neah Bay Washington, in 1792 and by the early nineteenth century, had spread into eastern Washington (Galbraith and Anderson 1991:213). Later, numerous herds of cattle and sheep were driven north from California and west from the Great Plains into the Willamette Valley and east of the Cascades. The practice of driving cattle over long distances ended in the 1880s with the creation of the Northern Pacific Railroad, the Utah and Northern Railroad, and the Oregon Short Line, which allowed for shipping cattle by rail. Cattle and sheep ranching expanded into and developed more fully in eastern Oregon during the 1850s and 1860s when miners moved into the Columbia Basin. For the most part, ranchers sold their meat and milk locally, but this changed in the 1870s when they were forced to look beyond the Pacific Northwest to compensate for the overpopulated industry in the region. In addition to supplying areas to the east with basic goods, the cattle were also used to create base herds in the Rocky Mountains (Galbraith and Anderson 1971:8-9).

Open range ranching on lands surrounding an established headquarters was the accepted practice until the 1890s when, after a series of severe winters, ranchers finally accepted that shelter and feed during the winter were necessary for a successful operation. Large-scale changes in land management, however, ultimately put an end to the practice of open range ranching. Following enactment of the Homestead Act, land began to be fenced off and property lines delineated; this prevented free movement of herds and limited travel along established sheep and cattle drive routes. In 1897, the federal government further limited open range with the creation of forest reserves to protect damaged range lands; a limited number of grazing leases were available to ranchers, which drastically reduced their access to public lands (Galbraith and Anderson 1971).

The first Basque populations arrived in this region during the late 1880s, with many settling in the southeastern corner of the state near Jordan Valley, Steens Mountain, and Ontario as well as the Boise and Nampa areas in Idaho. Known also as Amerikanuak (American Basques), most were sheepherders or livestock men who had immigrated from South America and had followed mining booms from California to Nevada and into Oregon and Idaho (Compean n.d.). Still others migrated directly from their homelands in the Pyrenees Mountains between France and Spain (Douglass and Bilbao 1975; Etulain 1991). The Basque migration to the United States peaked between 1900 and 1920 and had a direct impact on the economic, political, and cultural conditions of the American West, as well as to the growth of the sheep industry in the Pacific Northwest. Estimates of Basque in southeastern Oregon indicate that Basques probably made up more than half of the 1,000 to 2,000 residents of the region and may have represented nearly 90 percent of the area's sheep herders (Etulain 1991).

Immigration restrictions enacted in 1922 capped the allowable quotas for Spanish and French immigrants thereby drastically reducing Basque immigration (Compean n.d.). The new immigration restrictions compounded the economic hard times experienced by Basque families due to the Great Depression and the passing of the 1934 Taylor Grazing Act. The Act's restriction of grazing allotments on public lands forced the Basques to reduce the size of sheep herds, which directly impacted their income. The local sheep industry was also affected by overseas competition and the diminished demand for wool.

In the postwar era, Congress passed laws to encourage immigration by sheepherders which led to a new wave of Basque immigrants settling in Idaho and Oregon (Compean n.d.) Besides working as herders or at other ranch jobs, some Basque men secured work as miners or as laborers on irrigated farms. Several Basques also owned their own ranches, opened boarding houses, or sought success in other business 15,000 people living in Boise, Idaho that are of Basque decent are a clear indicator of the large impact they had upon the development of the region (O'Connor 2012).

Evidence of Greek sheepherders is also prevalent in the area. Historical sites on Lookout Mountain contain dendroglyphs; histories of the area indicate that these could be attributed to Greek families (Oman 1999). Cairns at sites in this area could be ascribed to the Greek sheepherders. Anecdotal histories also indicate a Greek presence among the sheepherders (Kirby 1989).

Many unnamed homesteads, cabins and roads are depicted on historic maps throughout the project area. In areas that are not known to have been actively involved in the timber or mining industries, these properties have been frequently associated with ranching. Reconnaissance level data indicates that the remains of possible ranching complexes, including resource types such as fences, corrals, chutes, buildings, windmills, and troughs are located within the 10-mile-wide corridor for indirect impacts along the Proposed Action, Longhorn Variation, Proposed 138/69-kV Rebuild, and Timber Canyon Alternatives.

3.2.8.6 Affected Environment

Cultural Resources Inventory Summary

Cultural Resources Identified through Class I, Class II, and Reconnaissance Level Survey of the B2H Analysis Area

A Class I records search examined a 4-mile-wide corridor centered on the Proposed Action and alternatives. Based on review of this information, a random sample within a 500-foot-wide corridor centered on the Proposed Action and alternatives was subject to a Class II pedestrian survey. Approximately 4,218 acres of the analysis area was surveyed in Oregon. The survey areas were located on both privately and federally owned land within Morrow, Umatilla, Union, Baker, and Malheur counties. In Idaho, an additional 303 acres of privately and federally owned land were surveyed within Owyhee County. The RLS was conducted for those visible lands within a 10-mile-wide corridor that included 5 miles on both sides of the Proposed Action and alternatives. The RLS identified above-ground resources that could be within the 10-mile-wide corridor. These consist of buildings and districts, archaeological sites with aboveground components, eligible and unevaluated irrigation features, railroads, and trails–including several segments of the Oregon NHT.

Cultural resources identified through Class I and Class II survey efforts as well as the RLS are presented in tables below. Resources are characterized by their recommended or determined NRHP-eligibility (properties listed in the NRHP and eligible for listing /properties ineligible for listing

/unevaluated properties), and further broken down by general resource type: prehistoric, historic, multicomponent (having evidence of both prehistoric and historic activity) or unknown. Cultural resources categorized as "unknown" are usually those for which incomplete records were found, and consequently could not be assigned to a particular time period. It is important to note that no determinations of eligibility have been formally made for cultural resources recorded during the Class II survey performed for the B2H Project. The NRHP-eligible properties presented in this section have been determined eligible in conjunction with previous undertakings and/or planning efforts.

Table 3-219 through Table 3-244 summarize the identified cultural resources and NRHP-eligible properties in the analysis area pertaining to each of the six segments of the project area and the Proposed Action and alternatives within each one. These tables also present the number of identified cultural resources within the analysis area of the corresponding segment of the Proposed Action. There are no alternatives identified for the portion of the Proposed Action in Idaho (segment 6). Note that historic districts are presented as a single resource in these tables, and their contributing properties are not included in the counts. Note that segments of NHT identified through RLS are also included in the counts; detailed recordation of these segments will occur through ILS prior to publication of the FEIS and Class III survey prior to project construction. Places important to Native Americans are located throughout the B2H Project area, but the precise locations of these places has not been disclosed for publication in the DEIS.

Table 3-219. Cultural Resources Located in Analysis Area of the Proposed Action

Resource Types	**Number of Resources for the Proposed Action Oregon**	**Number of Resources for the Proposed Action Idaho**
Unknown	3	4
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	92	20
Ineligible sites	186	20
Task-specific sites	27	11
Quarries	11	4
Utility lines	1	1
Unnamed roads/ditches	6	0
Roads /railroads/canals	35	5
Large habitations, precontact	1	0
Mining complex	17	2
Historic buildings/structures with integrity	234	7
Rock shelters	16	12
Rock cairns/alignments	52	5
Petroglyphs/pictographs	5	2
NRHP-listed sites/historic districts	31	2
Burials/cemeteries	13	3
Total	**730**	**98**

Table 3-220. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Proposed Action

Name	State	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
		Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action	Oregon	8	208	3	2	15	165	1	5	95	138	10	80	730
Proposed Action	Idaho	4	7	0	0	7	11	2	0	46	13	4	4	98

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Segment 1—Morrow-Umatilla

Segment 1 encompasses a portion of the Proposed Action and three alternatives: the Horn Butte, Longhorn Variation, and Longhorn alternatives, all three of which are clustered in the western extent of the segment. This segment is characterized by several important historic period cultural resources, including multiple segments of the Oregon NHT, a segment of the Oregon Railway and Navigation Company Railroad, the Cecil Survey District, the Willow Creek Campground, the Naval Weapons System Training Facility, and numerous historic cemeteries, houses, and other structures, especially in and near Pilot Rock, Boardman, and Cecil. A number of historic trails, wagon roads, homesteads, farmsteads, agricultural fields, and water-conveyance features (canals, ditches) also are present along Segment 1. Overall, the types of historic resources in this segment reflect historic period agriculture activities and railroad development. Recorded prehistoric sites consist of lithic scatters and open camps. . Resources recorded in the study areas of each of the three alternatives and the Proposed Action are described below.

Horn Butte Alternative

The Horn Butte Alternative analysis area contains 11 known cultural resources including segments of trails and other historic resources. The segment of the Proposed Action adjacent to the Horne Butte Alternative contains 19 known cultural resources. Both the Proposed Action and alternatives encompass a segment of the Oregon NHT, the Oregon Railway and Navigation Company Railroad, the Cecil General Store, several historic cemeteries, a historic farmstead, and a historic homestead. The Oregon NHT runs parallel to and slightly north of the Horn Butte Alternative alignment and proposed action where the route follows an east-west trajectory, and intersects the centerline of both the proposed and alternative near the juncture where the route shifts from an east-west to north-south trajectory. Few prehistoric resources have been recorded near the Horn Butte Alternative and Proposed Action analysis areas; these resources consist of a small number of unevaluated camps and lithic scatters.

Table 3-221. Cultural Resources Located in Analysis Area of the Horne Butte Alternative

Resource Types	Proposed Action Compared to Horn Butte Alternative	Horne Butte Alternative
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	3	0
Ineligible sites	1	1
Task-specific sites	4	2
Roads /railroads/canals	1	1
Historic buildings/structures with integrity	3	2
NRHP-listed sites/historic districts	5	4
Burials/cemeteries	2	1
Total	**19**	**11**

Table 3-222. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Horn Butte Alternative

	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				
Route Name	**Pre**	**Hist**	**MC**	**Unk**	**Pre**	**Hist**	**MC**	**Unk**	**Pre**	**Hist**	**MC**	**Unk**	**Total**
Proposed Action Compared to Horn Butte Alternative	0	4	0	0	0	1	0	0	6	8	0	0	19
Horn Butte Alternative	0	5	0	0	0	1	0	0	1	4	0	0	11

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Longhorn Variation

The Longhorn Variation analysis area contains 58 known cultural resources. Many of these are historic age buildings and structures, including the Boardman Fire Station, Riverside High School, and a Naval Weapons System Training Facility. Historic cemeteries are also present, including the Riverview Cemetery and an emigrant cemetery. Linear historic resources include the Oregon Railway and Navigation Company Railroad and the West Extension Irrigation Canal. Segments of trails are also present, including a segment of the Oregon NHT and Lewis and Clark NHT. The Oregon NHT runs perpendicular to the Longhorn Variation alignment and crosses its centerline near its southern terminus; The NRHP-listed Wells Spring segment of the Oregon NHT begins immediately west of the alignment. The Lewis and Clark NHT runs perpendicular to, but several miles north of, the Longhorn Variation alignment in southern Washington; it only slightly overlaps the northernmost extent of the analysis area. Three sites with both historic and prehistoric components and two prehistoric sites also were recorded in the indirect APE, including middens, camps, and lithic scatters. The segment of the Proposed Action corresponding to the Longhorn Variation Alternative contains substantially fewer recorded cultural resources (11), including several of the same linear resources that are present along the alternative. The Oregon NHT mostly runs parallel to the Proposed Action in this area and intersects its centerline where its alignment shifts from an east-west to north-south trajectory.

Table 3-223. Cultural Resources Located in Analysis Area of the Longhorn Variation Alternative

Resource Types	Proposed Action Compared to Longhorn Variation	Longhorn Variation
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	4	2
Ineligible sites	1	22
Task-specific sites	4	4
Utility lines	0	1
Unnamed roads/ditches	0	1
Roads /railroads/canals	1	5
Historic buildings/structures with integrity	4	18
NRHP-listed sites/historic districts	2	5
Burials/cemeteries	2	1
Total	**18**	**59**

Table 3-224. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Longhorn Variation Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Longhorn Variation	0	3	0	0	0	1	0	0	6	8	0	0	18
Longhorn Variation	0	20	0	0	0	22	0	0	2	12	3	0	59

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Longhorn Alternative

The Longhorn Alternative analysis area contains 49 known cultural resources. Many of these are historic age buildings and structures, such as the Oregon Railway, Navigation Company Railroad and Riverside High School, and various houses and other buildings in Boardman. Segments of trails are also present, including a segment of the Oregon NHT and Lewis and Clark NHT. The Oregon NHT runs perpendicular to the Longhorn Alternative and crosses its centerline near its southern terminus. The Lewis and Clark NHT runs perpendicular to, but several miles north of, the Longhorn Alternative; it only slightly overlaps the northernmost extent of the analysis area. The Longhorn Alternative analysis area also contains multiple historic cemeteries and roads. Multicomponent and prehistoric resources are also present within the indirect APE, including archaeological sites in proximity to the Columbia River.

These sites include camps, middens, residential areas, and lithic scatters. The corresponding segment of the Proposed Action contains substantially fewer known cultural resources (17), including several of the same linear historic period resources recorded along the alternative. The Oregon NHT generally runs parallel to the Proposed Action in this area and intersects its centerline where its alignment shifts from an east-west to north-south trajectory.

Table 3-225. Cultural Resources Located in Analysis Area of the Longhorn Alternative

Resource Types	Proposed Action Compared to Longhorn Alternative	Longhorn Alternative
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	3	2
Ineligible sites	1	20
Task-specific sites	3	4
Utility lines	0	1
Unnamed roads/ditches	0	1
Roads /railroads/canals	1	3
Historic buildings/structures with integrity	5	16
NRHP-listed sites/historic districts	2	3
Burials/cemeteries	2	0
Total	**17**	**50**

Table 3-226. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Longhorn Alternative

	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				
Route Name	**Pre**	**Hist**	**MC**	**Unk**	**Pre**	**Hist**	**MC**	**Unk**	**Pre**	**Hist**	**MC**	**Unk**	**Total**
Proposed Action Compared to Longhorn Alternative	0	3	0	0	0	1	0	0	6	7	0	0	17
Longhorn Alternative	1	16	0	0	0	18	2	0	2	8	3	0	50

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Segment 2—Blue Mountains

Segment 2 encompasses a portion of the Proposed Action and one alternative, the Glass Hill Alternative, which is located in the approximate midpoint of the segment. Significant cultural resources located along Segment 2 include several segments of the Oregon NHT, and the NRHP-listed La Grande Commercial Historic District (LGCHD). Additional historic period resources in Segment 2 include roads, homesteads, railroad segments, camps and, various structures associated with La Grande and North Powder. Prehistoric resources consist of lithic scatters, open camps, and a small number of rock alignments. Cultural resources recorded in the analysis area for the Glass Hill Alternative and the Proposed Action are described below.

Glass Hill Alternative

The Glass Hill Alternative analysis area contains 32 known cultural resources. Some of these are historic age buildings and structures, including railroad grades and historic era buildings associated with the nearby community of La Grande. Multiple trail segments are present, including Whiskey Creek Segment of the Oregon NHT and several trail markers. The Oregon NHT follows a roughly parallel trajectory to the north and east of both the Glass Hill Alternative and Proposed Action in this analysis area, but it does not cross either of their centerlines. A small number of prehistoric flaked stone scatters are present as well. The adjacent portion of the Proposed Action encompasses part of the LGCHD. The Proposed Action's proximity to the town of La Grande accounts for the high frequency of resources, which include numerous historic buildings outside of the LGCHD and associated linear resources (roads, railroads). Few prehistoric resources have been recorded in either the Proposed Action or the Glass Hill Alternative analysis areas.

Table 3-227. Cultural Resources Located in Analysis Area of the Glass Hill Alternative

Resource Types	Proposed Action Compared to Glass Hill Alternative	Glass Hill Alternative
Unknown	4	4
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	4	4
Ineligible sites	52	9
Task-specific sites	1	1
Unnamed roads/ditches	2	2
Roads /railroads/canals	1	2
Large habitations, precontact	1	1
Historic buildings/structures with integrity	28	4
Rock cairns/alignments	2	2
NRHP-listed sites/historic districts	2	3
Total	**97**	**32**

Table 3-228. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Glass Hill Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Glass Hill Alternative	0	27	0	0	1	50	1	0	3	10	1	4	97
Glass Hill Alternative	0	6	0	0	1	7	1	0	4	8	1	4	32

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Segment 3—Baker Valley

Segment 3 encompasses a portion of the Proposed Action and three alternatives: the Timber Canyon, Flagstaff, and Burnt River Mountain Alternatives. Key historic period resources in this Segment 3 include the Oregon NHT and other trail segments, the Virtue Flat Mining area, and numerous buildings and other resources located in and near Baker City, Huntington, Durkee, Weatherby, and Sparta. The NRHP-listed Baker City Historic District (BCHD) is also present within Segment 3, along with numerous historic roads, homesteads, fields, and mining- and logging-related features. Prehistoric resources, especially lithic scatters and mining areas/quarries are numerous in Segment 3. Numerous cultural resources possibly significant to Native American tribes are also present, such as petroglyph panels, a dendroglyph/arborglyph, and numerous cairns, rock alignments, and other arranged-rock features. Several rockshelters also have been recorded in the Baker Valley. Overall, the Segment 3 area appears to have been an important area for both prehistoric and historic settlement and land use, especially mining/quarrying activities. Cultural resources recorded in the analysis areas of each of the three alternatives and the Proposed Action are described below.

Timber Canyon Alternative

The Timber Canyon Alternative analysis area contains 257 known cultural resources. Numerous cairns and rock alignments, both historic and prehistoric in age, are present, as are two segments of the Goodale's Cutoff Trail, prehistoric rockshelters, and arranged-rock features. The Oregon NHT follows a roughly parallel route located far to the west of the Timber Canyon Alternative, but it intersects its centerline at its southern terminus where it rejoins the Proposed Action. The Goodale's Cutoff Trail runs perpendicular to and crosses the Timber Canyon Alternative alignment. The segment of the Proposed Action corresponding to the Timber Canyon Alternative contains 107 known resources, including a number of historic mines and ranching complexes, the Virtue Flat segment of the Oregon Trail, several Oregon NHT monuments, historic buildings and structures (mostly associated with the town of North Powder), and numerous prehistoric cairns, rock alignments, a petroglyph, and several quarry sites. The Oregon NHT runs parallel to, and several miles west of the Proposed Action in this analysis area; the Virtue Flat segment of the NHT intersects the Timber Canyon Alternative in the area east of Baker City.

Table 3-229. Cultural Resources Located in Analysis Area of the Timber Canyon Alternative

Resource Types	Proposed Action Compared to Timber Canyon Alternative	Timber Canyon Alternative
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	9	58
Ineligible sites	16	21
Task-specific sites	4	16
Quarries	4	5
Utility lines	0	1
Unnamed roads/ditches	0	5
Roads /railroads/canals	10	19

Resource Types	Proposed Action Compared to Timber Canyon Alternative	Timber Canyon Alternative
Mining complex	15	37
Historic buildings/structures with integrity	28	50
Rock shelters	1	8
Rock cairns/alignments	13	33
Petroglyphs/pictographs	1	0
NRHP-listed sites/historic districts	0	3
Burials/cemeteries	0	1
Total	**107**	**257**

Table 3-230. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Timber Canyon Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Timber Canyon Alternative	1	26	0	1	2	9	0	5	12	35	0	16	107
Timber Canyon Alternative	26	29	2	4	4	12	0	5	34	94	11	36	257

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Flagstaff Alternative

The Flagstaff Alternative analysis area contains 188 known cultural resources. Most are historic age buildings, mines, and structures, with segments of trails; prehistoric artifact scatters and rock alignments are also present. This alternative encompasses many historic period resources associated with the town of Baker City, including the Baker City Historic District (BCHD). The corresponding segment of the Proposed Action contains substantially fewer known resources (41), comprised of mostly historic period mines, roads, and trails. Few prehistoric sites were recorded along both the Proposed Action and alternatives, mainly representing rock alignments and lithic scatters. One rockshelter was recorded in the analysis area of the Proposed Action. The Virtue Flat segment of the Oregon NHT is present within the analysis area of both the Proposed Action and the Flagstaff Alternative and crosses both of their centerlines slightly north and east of Baker City.

Table 3-231. Cultural Resources Located in Analysis Area of the Flagstaff Alternative

Resource Types	Proposed Action Compared to Flagstaff Alternative	Flagstaff Alternative
Unknown	0	2
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	5	6
Ineligible sites	3	37
Task-specific sites	1	1
Roads /railroads/canals	6	5
Mining complex	13	6
Historic buildings/structures with integrity	2	119
Rock shelters	1	0
Rock cairns/alignments	3	4
NRHP-listed sites/historic districts	7	8
Total	**41**	**188**

Table 3-232. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Flagstaff Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Flagstaff Alternative, including 230-kV rebuild	0	9	0	0	1	2	0	0	6	21	0	2	41
Flagstaff Alternative, including 230-kV rebuild	0	121	0	0	1	36	0	0	8	20	0	2	188

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Burnt River Mountain Alternative

The Burnt River Mountain Alternative analysis area contains 50 known cultural resources. Historic age roads, mines, and structures, and segments of trails are present in the analysis area, as are prehistoric lithic scatters, quarry sites, and rock cairns. Key historic resources include a segment of the Oregon NHT, the Rattlesnake Springs landmark of the Oregon NHT, and a number of historic-aged residential, commercial and governmental buildings. The analysis area of the corresponding segment of the Proposed Action contains slightly fewer resources (40), including many of the same historic period buildings and structures. A similar range of prehistoric sites was also recorded in the Proposed Action analysis area, including cairns, quarry sites, and lithic scatters. The segment of the Oregon NHT present in the Burnt River Mountain Alternative analysis area is also present in the Proposed Action analysis area. It runs parallel to, and in between, the Burnt River Mountain Alternative and Proposed

Action and intersects both of their centerlines near the northern and southern termini of the Burnt River Mountain Alternative.

Table 3-233. Cultural Resources Located in Analysis Area of the Burnt River Mountain Alternative

Resource Types	Proposed Action Compared to Burnt River Mountain Alternative	Burnt River Mountain Alternative
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	2	9
Ineligible sites	5	4
Task-specific sites	2	2
Quarries	4	4
Unnamed roads/ditches	0	2
Roads /railroads/canals	5	4
Mining complex	1	3
Historic buildings/structures with integrity	14	13
Rock cairns/alignments	3	3
Petroglyphs/pictographs	1	1
NRHP-listed sites/historic districts	3	5
Total	**40**	**50**

Table 3-234. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Burnt River Mountain Alternative

	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				
Route Name	**Pre**	**Hist**	**MC**	**Unk**	**Pre**	**Hist**	**MC**	**Unk**	**Pre**	**Hist**	**MC**	**Unk**	**Total**
Proposed Action Compared to Burnt River Mountain Alternative	1	6	0	0	1	4	0	0	4	18	0	6	40
Burnt River Mountain Alternative	1	7	0	0	1	3	0	0	14	18	0	6	50

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Segment 4—Brogan Area

Segment 4 encompasses a portion of the Proposed Action along with two alternatives, the Willow Creek and Tub Mountain South alternatives. Several portions of the Oregon NHT are present in Segment 4, along with the historically significant Vale Irrigation District, Farewell Bend State Park, and Huntington Survey District (HSD), where many of the historic structures and landscape features in Segment 4 are concentrated. This segment also encompasses numerous historic roads, homesteads, water-conveyance features, and historic period refuse dumps. A number of emigrant graves are also present. Prehistoric resources slightly outnumber historic period features in Segment 4 and include numerous lithic scatters, rock alignments, and mining/quarrying loci. A small number of prehistoric rockshelters, open camps, and rock art panels (including the Holtz Pictographs) also were recorded. As with Segment 3, prehistoric occupants appear to have been drawn to the Brogan Area to exploit opportunities for mining/quarrying raw lithic materials. The cultural resources located in the analysis areas within the Willow Creek and Tub Mountain South alternatives and the Proposed Action are described below.

Willow Creek Alternative

The Willow Creek Alternative analysis area contains 95 known cultural resources, many of which are prehistoric rock alignments, artifact scatters, rock art sites, cairns, quarries, a rockshelter, and numerous sites with stacked and arranged rock features. Historic age roads, mines, and structures are also present. The corresponding segment of the Proposed Action includes 72 known cultural resources, most of which are also prehistoric sites with a similar range of features. Both the Proposed Action and alternatives have analysis areas that incorporate historic buildings and structures in the Town of Huntington, a segment of the Oregon NHT, and the Holtz Pictograph site. At the northernmost extent of the Willow Creek Alternative analysis area, the Oregon NHT is located within a mile to the east of the centerlines for both the alternative and Proposed Action.

Table 3-235. Cultural Resources Located in Analysis Area of the Willow Creek Alternative

Resource Types	Proposed Action Compared to Willow Creek Alternative	Willow Creek Alternative
Unknown	1	0
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	31	37
Ineligible sites	9	6
Task-specific sites	1	0
Quarries	2	2
Unnamed roads/ditches	0	
Roads /railroads/canals	2	3
Historic buildings/structures with integrity	19	19
Rock shelters	0	1
Rock cairns/alignments	19	25
Petroglyphs/pictographs	1	1
NRHP-listed sites/historic districts	3	4
Burials/cemeteries	1	2
Total	**88**	**100**

Table 3-236. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Willow Creek Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Willow Creek Alternative	4	15	1	0	8	1	0	0	28	10	3	18	88
Willow Creek Alternative	2	4	1	0	6	0	0	0	51	13	5	18	100

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Tub Mountain South Alternative

The Tub Mountain South Alternative analysis area contains 119 known cultural resources, most of which are prehistoric rock features and artifact scatters, including cairns, rock alignments, quarries, and the Ali-Alk rock shelter. Historic age roads, mines, canals, and structures are also present. The analysis area of the corresponding segment of the Proposed Action contains slightly fewer cultural resources (94), but many of the same linear features are present. The Proposed Action analysis area encompasses a similar range of prehistoric and historic resources as that of the alternative. The analysis areas of the Proposed Action and alternative both possess historic buildings and structures in the Town of Huntington, a segment of the Oregon NHT, and the Holtz Pictograph site. The Oregon NHT intersects the centerline of the Tub Mountain South Alternative in two locations near its southern and northern termini. It does not intersect the Proposed Action centerline within this analysis area.

Table 3-237. Cultural Resources Located in Analysis Area of the Tub Mountain South Alternative

Resource Types	Proposed Action Compared to Tub Mountain South Alternative	Tub Mountain South Alternative
Unknown	0	1
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	42	38
Ineligible sites	11	9
Task-specific sites	1	4
Quarries	2	9
Unnamed roads/ditches	0	2
Roads /railroads/canals	3	8
Historic buildings/structures with integrity	9	14
Rock shelters	0	3
Rock cairns/alignments	19	20
Petroglyphs/pictographs	1	0
NRHP-listed sites/historic districts	5	10
Burials/cemeteries	1	1
Total	**94**	**119**

Table 3-238. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Tub Mountain South Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Tub Mountain South Alternative	4	12	1	0	9	2	0	0	35	10	3	18	94
Tub Mountain South Alternative	7	6	3	1	0	1	0	0	52	27	4	18	119

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Segment 5—Malheur

Segment 5 encompasses a portion of the Proposed Action along with three alternatives: the Malheur A, Malheur S, and Double Mountain Alternatives. The resources in this segment include historic roads, homesteads, dams, and water-conveyance features as well as numerous prehistoric lithic scatters, mining/quarrying loci, and rock alignments. Several prehistoric rockshelters and open camps also were recorded in this area. The Malheur Segment also encompasses the NRHP-listed Owyhee Dam Historic District (ODHD) and various canals, ditches, and other components of the Owyhee Irrigation project. Heavily disturbed (and ineligible) segments of Meek Cutoff Trail and the Dalles Military Wagon Road are also present. Overall, the historic period resources along Segment 5 are largely associated with water-control and conveyance; prehistoric resources are mostly associated with procurement and processing of lithic raw materials. The cultural resources recorded in the analysis areas of each of the three alternatives and the Proposed Action are described below.

Malheur A Alternative

The Malheur A Alternative analysis area contains 91 known cultural resources, many of which are prehistoric rock alignments, lithic scatters and camps, as well as two rockshelters. Historic age roads, mines, and structures are also present, and historic irrigation features are prevalent. The analysis area of the alternative also contains a portion of the NRHP-listed Owyhee Dam Historic District, which is not present in the analysis area of the Proposed Action. Other historic-era cultural resources in the Malheur A Alternative analysis area include an abandoned segment of the Union Pacific Railroad, a segment of the Meek Cutoff Trail, and the Vale Irrigation Project Canal. The corresponding segment of the Proposed Action contains 29 known resources in its analysis area, including a number of historic canals, irrigation ditches, and roads. A small number of lithic scatters and a rock alignment have also been recorded in the analysis area for the Proposed Action.

Table 3-239. Cultural Resources Located in Analysis Area of the Malheur A Alternative

Resource Types	Proposed Action Compared to Malheur A Alternative	Malheur A Alternative
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	11	33
Ineligible sites	4	15
Task-specific sites	3	5
Unnamed roads/ditches	1	2
Roads /railroads/canals	7	7
Mining complex	0	3
Historic buildings/structures with integrity	2	18
Rock shelters	0	3
Rock cairns/alignments	1	1
NRHP-listed sites/historic districts	0	4
Total	**29**	**91**

Table 3-240. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Malheur A Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Malheur A Alternative	0	1	0	0	1	3	0	0	12	10	2	0	29
Malheur A Alternative	1	21	0	2	1	14	0	0	36	9	6	1	91

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Malheur S Alternative

The Malheur S Alternative analysis area contains 97 known cultural resources, many of which are prehistoric rock alignments or artifact scatters. Historic age roads, mines, and structures are also present, and historic irrigation features are prevalent. Key historic resources include an abandoned segment of the Union Pacific Railroad, a segment of the Meek Cutoff Trail, and the Vale Irrigation Project Canal. The Meek Cutoff Trail follows a roughly perpendicular trajectory to the east and west of the Malheur S Alternative in the analysis area, but it does not cross its centerline. The resources situated along the corresponding segment of the Proposed Action are the same as those described for the segment of the Proposed Action in the Malheur A Alternative analysis area. The centerline of the Proposed Action intersects with the trail to the north of the U.S. Route 26 (also known as the Central Oregon Highway) near the northern end of the segment.

Table 3-241. Cultural Resources Located in Analysis Area of the Proposed Action

Resource Types	Proposed Action Compared to Malheur S Alternative	Malheur S Alternative
Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	12	34
Ineligible sites	4	15
Task-specific sites	3	7
Unnamed roads/ditches	0	1
Roads /railroads/canals	6	9
Mining complex	0	3
Historic buildings/structures with integrity	2	20
Rock shelters	0	4
Rock cairns/alignments	1	1
NRHP-listed sites/historic districts	2	3
Total	**30**	**97**

Table 3-242. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Malheur S Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Malheur S Alternative	0	2	0	0	1	3	0	0	11	9	2	2	30
Malheur S Alternative	1	21	0	2	1	14	0	0	39	12	6	1	97

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Double Mountain Alternative

The analysis area for the Double Mountain Alternative contains only two known cultural resources: a historic and a multicomponent trash scatter. The Double Mountain Alternative does not contain any known cultural resources.

Table 3-243. Cultural Resources Located in Analysis Area of the Double Mountain Alternative

Resource Types	Proposed Action Compared to Double Mountain Alternative	Double Mountain Alternative
Ineligible sites	0	1
Historic buildings/structures with integrity	0	1
Total	**0**	**2**

Table 3-244. NRHP Eligibility of Cultural Resources Located in Analysis Area of the Double Mountain Alternative

Route Name	NRHP-Eligible Sites				Not-Eligible Sites				Unevaluated Sites				Total
	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	Pre	Hist	MC	Unk	
Proposed Action Compared to Double Mountain Alternative	0	0	0	0	0	0	0	0	0	0	0	0	0
Double Mountain Alternative	0	0	0	0	0	1	0	0	0	0	1	0	2

Table Source: Data from Class I, Class II, and reconnaissance level surveys.

Table Abbreviations: NRHP = National Register of Historic Places; Pre = prehistoric; Hist = historic; MC = multicomponent; Unk = unknown.

Segment 6—Treasure Valley

Segment 6 includes the Proposed Action. This resources located in the analysis area are summarized above in Table 3-219. The Proposed Action includes two NRHP-listed historic period properties, the Poison Creek Stage Station and Bernard's Ferry. An intact segment of the Oregon NHT (South Alternate) is also present, along with the Wilson Cemetery and numerous historic period roads, canals, ditches, mining claims, and scattered buildings. Prehistoric resources are frequent and include several prominent petroglyph locations, notably the NRHP-listed Map Rock Petroglyphs Historic District and Givens Hot Springs area. Prehistoric lithic scatters and open camps are prevalent, and rockshelters are particularly frequent in comparison with the other segments.

Tribal Issues

As discussed previously, ethnographic studies have been undertaken by the CTUIR and Shoshone Paiute Tribes to assist with the identification of traditional cultural properties and other resources of concern to tribal members. The CTUIR study also conducted a sample inventory for the presence of First Foods, traditional plant resources considered culturally significant to Tribe within the B2H Project area. Neither the Shoshone Paiute Tribes nor CTUIR have disclosed the location of TCPs or other resources for publication in the Draft EIS, although CTUIR has identified at least 45 known NRHP-eligible TCPs in or near the project area that could be affected by the Proposed Action. CTUIR has further indicated the existence of a cultural landscape used for procurement of First Food resources that extends over a large portion of the Proposed Action analysis area from the project's intersection with McKay Creek, west of the Blue Mountains to Clover Creek, northeast of the community of North Powder, Oregon.

Consulting tribes have also indicated concern with Project impacts to the broader cultural landscape which includes certain classes of resources that are considered culturally significant, including: trade sites; village and settlement sites; trails; treaty sites; natural springs; rock image sites; rock structures and buttes; caves and rockshelters; hunting, gathering and fishing locations; battle sites; burial sites; First Food collection areas; sites associated with ceremonies and legends, and monumental features such as rock formations. Impacts to segments of the Shoshone Paiute Trail of Tears is also a paramount concern for the Shoshone Paiute Tribes. The Trail is considered to be a spiritually significant property to Tribe, and project impacts continue to be evaluated through government-to-government consultation.

3.2.8.7 ENVIRONMENTAL CONSEQUENCES

DATA CONSIDERATIONS

The data used for analysis reflects the most current cultural resources information collected for the B2H Project. As described earlier, these data consist of a Class I overview of records on cultural resources for a 4-mile-wide corridor centered on the Proposed Action and each alternative; ethnographic studies of the project area; an RLS for a 10-mile-wide corridor encompassing lands from which the project would be visible; and 15 percent sample pedestrian surveys of a 500-foot-wide corridor for the Proposed Action and all alternatives.

The Class I and Class II data are augmented by the data collected through the RLS, which aimed to further document the presence of aboveground cultural resources that may be indirectly (e.g., visually) impacted by the construction of the project. The ethnographic data collected through study and consultation with Native American tribes is presented in the Draft EIS at the project level and will be used by the agency during impact analysis to evaluate specific resources or classes of resources that should be considered in the agency's decision.

Additional data will be collected as NEPA analysis progresses. Class III pedestrian survey will occur to provide for comprehensive identification of cultural resources for the Agency Preferred Alternative and will be summarized in the Final EIS. Cultural resources identified in the RLS as requiring additional evaluation and assessment will be completed during the ILS, and the results will be summarized in the Final EIS.

DETERMINATIONS OF EFFECT UNDER SECTION 106 OF THE NHPA

Pursuant to Section 106 of the NHPA, project effects upon all historic properties located with the defined APE will be determined by the agency, in consultation with SHPOs, tribes, and parties to the abovementioned project PA, in compliance with Section 106 of the NHPA. Adverse effects are found when the defined undertaking alters—either directly or indirectly—the characteristics that qualify the property for inclusion in the NRHP in a manner that would diminish the property's integrity (CEQ and ACHP 2013). Where effects are determined to be adverse, the agency shall consult with the SHPO/THPO, consulting parties including Indian Tribes to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. The application of avoidance, minimization and mitigation measures will be guided by the provisions of the project PA.

ANALYSIS OF IMPACT UNDER NEPA

As described earlier, analysis of cultural resource impacts under the NEPA process will not be limited to an examination of effect as applied to the narrower category of "historic properties" defined by the Section 106 process. Impacts under NEPA are examined in terms of whether the Proposed Action would "significantly affect the quality of the human environment." Impacts are analyzed based on an assessment of context, defined here as the affected cultural resource; and intensity, construed here as the severity, or magnitude, of the effect (40 CFR 1508.27). Although NEPA impact analysis is not limited to examination of effect to NRHP-eligible properties, information on NRHP eligibility has been included in the analysis as a proxy for resource significance and to assist with an approximation of the magnitude of an effect.

Type and Level of Impact

The construction, operation and maintenance of the B2H Project could potentially result in both direct and indirect effects to cultural resources. These impacts may be classified as:

- *Direct,* involving physical impact to the resource through ground disturbance associated with construction activities. Resources directly impacted by the project will be located within the 500 foot corridor for direct impacts.
- *Indirect,* involving physical impact to the resource that may be further removed in time as a by-product of increased access to the right-of-way and future operation and maintenance activity. Resources indirectly impacted by the project as a by-product of increased access will be located within the 500 foot corridor for direct impacts. Very few of these resources should be located outside of the 500 foot corridor.
- *Indirect,* involving visual, auditory and atmospheric impact to the resource as a by-product of construction and operation of the project. Resources indirectly impacted by the project as a function of visual, auditory and atmospheric effects may be located within the 500-foot-wide corridor for direct impacts; however, these resources may also be located outside this corridor. For example, resources—such as historic trails—for which setting contributes to character, may be indirectly impacted if they are located within the viewshed of the project.

At the time of this writing, evaluation of indirect impacts to resources identified in the RLS as requiring further analysis has not occurred. Analysis of indirect impacts will occur following the process outlined in the Visual Assessment of Historic Properties workplan, which will be appended to the project PA. Direct impacts to most of the resources located in the 500-foot-wide corridor can be avoided through micrositing of project elements, such as towers, tie downs, roads, and substation structures. However, it is important to note that avoidance of direct impacts through micrositing and monitoring of construction activities will not account for indirect impacts that may result from increased access and future operation and maintenance of the project. The resolution of both direct and indirect impacts is addressed in the project PA that shall be executed for the B2H Project prior to the Record of Decision, as well as the Historic Properties Management Plan (HPMP) that will be produced prior to issuance of a Notice to Proceed.

Effects Analysis Methodology

In order to evaluate the cultural resources impacts of an alternative when compared to the segment of Proposed Action for which the alternative would replace, a methodology was developed to calculate an index of potential impact. The intent behind generating a single index value for the Proposed Action and alternatives was to find a comparative means of evaluating an impact in terms of both the *quantity* of cultural resources and the *sensitivity* of the resources in terms of resource type; and in the case of RLS and Class I cultural resources data, *distance* from the Project centerline. The variable of sensitivity, as discussed below, assumes that certain resources are either rarer than others, have strong cultural values to tribes and other ethnic groups, are more difficult to avoid, or for which adverse effects are more difficult to mitigate. The latter variable of distance assumes that the likelihood of impacts to cultural resources would generally decrease as a function of distance of the resource from the transmission line and facilities.

The data for these calculations come from three data sources: the Class II survey, which encompassed randomly selected 1-mile long, 500 foot wide survey segments that together comprise a 15 percent sample of both the Proposed Action and alternatives; the RLS, which consisted of a records search and “windshield survey” of cultural resources located within a 10-mile-wide corridor of the Proposed Action and alternatives that could potentially be visually impacted by the project; and the Class I data, which consisted of a review of existing reports and records to obtain locations and attribute information for previously recorded sites within 2 miles on either side of the centerline for the Proposed Action and alternatives. The RLS and Class I data were combined for the index calculation. However, as the Class II data collection involved systematic data collection of randomly generated one-mile segments for Proposed Action and alternatives, these data were analyzed separately. The differences in how the Class II data was collected do not allow for direct comparison with the data from the RLS and Class I records searches.

The Potential Impact indexes for the Class II and RLS/Class I datasets were calculated based on several key variables. The first variable accounts for the actual frequency (count) of cultural resources documented along the Proposed Action and alternatives. The route segments varied in length and, therefore, encompassed survey areas of varying size. For the Class II survey in particular, the Proposed Action and alternatives often encompassed different numbers of one-mile survey segments. Consequently, the frequencies of cultural resources among the various alternatives are largely a function of the varying amount of acreage that they encompassed. To standardize the frequency values, therefore, the raw counts of cultural resources were divided by the total survey acreage, which resulted in a value representing the number of recorded cultural resources per acre.

The second key variable examined gauges the “sensitivity” level of the cultural resources identified in each segment and alternative. Five ranked sensitivity categories were applied to the types of properties identified through Class I records search, Class II survey, and RLS: low, low-moderate, moderate, moderate-high, and high (Table 3-245). Discrimination as to which category a certain property type would fall into was judgmental, based largely on whether or not the resource had been listed in the NRHP or was part of an NHT designation, and BLM cultural resources’ staff’s knowledge of the prevalence of the resource. For example, resources graded as highly sensitive include NRHP-listed properties and resources which may represent TCPs; lower-sensitive resources included archaeological sites and small lithic scatters that have previously been determined ineligible for listing in the NRHP.

Table 3-245. Sensitivity Values and Weightings

Sensitivity	Resource Types	Weighting
Low	Lithic scatter/historic debris scatter with which cannot be assigned a specific age based on artifacts or features	1
Low	Ineligible sites	
Low	Isolated features like prospect pits	
Low-moderate	Task-specific sites	2
Low-moderate	Quarries	
Low-moderate	Historic locations lacking structures	
Low-moderate	Utility lines	
Low-moderate	Unnamed roads/ditches	
Moderate	Roads /railroads/canals	3
Moderate	Historic trails lacking integrity of physical features or trail segments deemed noncontributing	
Moderate	Large habitations, precontact	
Moderate	Mining complex	
Moderate	Historic buildings/structures with integrity	
Moderate-high	Rock shelters	4
Moderate-high	Cultural landscapes with integrity	
Moderate-high	Rock cairns/alignments	
Moderate-high	Petroglyphs/pictographs	
High	NRHP-listed sites/historic districts	5
High	TCPs/properties of traditional religious and cultural significance	
High	Paleoindian sites	
High	Burials/cemeteries	

Table Abbreviations: NRHP = National Register of Historic Places; TCP = traditional cultural property.

These sensitivity categories were assigned numeric values (weightings) from 1 to 5, which were used as multipliers, so that resources judged more “sensitive” would generate higher scores than those judged less-sensitive. For multicomponent archaeological sites, sensitivity values were assigned based on the highest-scoring component; for example, a site containing a lithic scatter and rock cairns would be coded as moderate-high sensitivity based on the presence of the cairns, which are considered a highly sensitive cultural resource type. This analysis focused on segments of the B2H Project that possessed an alternative for the Proposed Action; as there are not alternatives for the segment of the Proposed Action in Idaho, a Potential Impact index has not been developed for this area of the Proposed Action.

A higher Potential Impact Index score for an alternative or segment of corresponding Proposed Action indicates higher potential for cultural resources impacts. These index values should not be construed as proxies for site significance but are a tool to facilitate comparison of the Proposed Action and alternatives. Government to government consultation with tribes and consultation with Parties to

Section 106 will be considered in the agency's analysis and decision making with regards to cultural resources.

Analysis of Impacts Common to the Proposed Action and Alternatives

Specific Impacts Related to Construction, Operations, and Maintenance

Construction of the transmission line and its ancillary facilities could directly impact existing cultural resources. Construction or other ground-disturbing activities could directly or indirectly impact previously unidentified cultural resources, especially buried resources. Such impacts are likely to be adverse. Increased use of existing and new access roads may encourage unauthorized site access, artifact collection, and vandalism. Vibrations from construction equipment and construction activities (such as blasting or drilling) may impact cultural resources, especially historic period resources with standing architecture or prehistoric rockshelters. Impacts on the setting and feeling of cultural resources may be introduced through the addition of the project's structural elements to the landscape. Construction of transmission line towers may introduce an indirect (visual) impact upon existing cultural resources, especially historic trails. Because of the existence of the Oregon NHT and trails under study for NHT designation in the project area, an analysis of impacts to these important resources is addressed separately in Section 3.2.9.

Once the transmission line has been constructed, the presence of large transmission towers may introduce long-term impacts to the setting of certain cultural resources particularly sensitive to changes in the visual field, including historic trails, traditional cultural properties, and cultural landscapes.

Cultural resources that are within the analysis area may be directly affected by use and improvement of access roads, and construction of pads for new transmission line structures and facilities.

Indirect effects could consist of increased off-road traffic, and therefore easier access to cultural resources, that could result in vandalism or inadvertent adverse effects. Auditory impacts may consist of transmission line "buzzing" or "humming" that could detract from the remote sense of feeling contributing to the character of certain cultural resources, such as historic trails, traditional cultural properties, and cultural landscapes.

Periodic access to the transmission line right-of-way is required to maintain its operating function. Thus, access roads would be kept open, at least at a two-track level, which increases the potential for vandalism and illicit artifact collection. Continued use of access roads for maintenance may also promote erosion, which could impact cultural resources located along the margins of roads. Other maintenance activities, such as vegetation removal, bear the potential to create ground disturbance, which may in turn, impact both previously identified and unidentified resources.

Some Native American tribes express concerns that construction, operation, and maintenance activities will reduce the number of plant and animal species considered sacred to them and will restrict tribal-member access to sacred areas. Tribes are also concerned that construction, operation, and maintenance activities will impair ceremonial use of sacred sites by tribal members through the following:

- Alteration of the broader site context; spiritual abandonment of the sacred sites
- Disruption of the visual qualities of the landscape
- Physical desecration of sites, objects and materials
- Distraction of ceremonial participants
- Interference of electrical energy with the spiritual environment
- Loss of ceremonial objects, materials, and medicines
- Increased accessibility of the project area by people who are not Native American
- Eventual site abandonment by spiritual practitioners

Analysis of Impact for No Action Alternative

Under the No Action Alternative, no direct or indirect project impacts to identified cultural resources would occur. Other effects due to continued access, recreation, looting of archaeological sites, and similar actions would continue at the current rate, and would be the responsibility of the land managing agency. The No Action Alternative states that the agencies would not issue a permit for the construction or operations of the project on federally managed lands. No impacts would occur to cultural resources identified in this EIS.

Comparative Analysis of Impacts of Proposed Action and Alternatives

For the Class II and RLS/Class I dataset, the following calculation was used to generate a Potential Impact Index that takes into account resource per acre data and cultural resources sensitivity for the Proposed Action or alternatives:

- Count of “low” sensitivity cultural resources/ survey acreage +
- Count of “low-moderate” sensitivity cultural resources x 2 / survey acreage +
- Count of “moderate” sensitivity cultural resources x 3 / survey acreage+
- Count of “moderate-high” sensitivity cultural resources x 4 / survey acreage+
- Count of “high” sensitivity cultural resources x 5 / survey acreage

Class II survey acreage was calculated based on the number of 1-mile survey segments within the Proposed Action and alternatives, which ranged from zero to 11. Each 1-mile survey segment encompassed an estimated area of 60.6 acres (500 x 5,280 feet [1 mile] = 2,640,000 square feet = 60.6 acres). The acreage thus was calculated as the number of 1-mile survey segments in a route segment times 60.6 acres. In order to avoid very small density values (i.e., values in the hundredth or thousandth decimal point of a resource per acre), the density values were multiplied by 100, resulting in counts of cultural resources per 100 acres within the survey segments. The RLS/Class I survey acreage was calculated in GIS.

As the combined RLS/Class I data spanned the entire analysis area (10-mile-wide corridor centered on the Proposed Action and alternatives' centerlines), a third variable of distance was used to calculate the Potential Impact Index value for this data. For these data, the distance was divided into three zones: 0–250 feet of centerline; 250–750 feet of centerline, and 750 feet–5 miles of centerline. For the RLS/Class I data, distance from centerline data serves as a proxy for evaluating the visual impact of the proposed undertaking on cultural resources, with the assumption that resources located closer to the transmission-line towers will be subjected to a more intense and sustained visual impact than those located at a greater distance. To accommodate this assumption that distance is a proxy for the intensity of visual impact, distance zones were coded with ordinal values of 1–3, with a value of 3 for resources located closer to the centerline in the 0-250-foot zone; 2 for resources in the 250-750-foot zone; and 1 for resources in the 750-foot-5 miles of centerline; these values functioned as multipliers for calculating the Potential Impact Index. For example, a highly sensitive resource located within 0–250 feet of the centerline would generate a Potential Impact Index of 15 (sensitivity value of 5 times a distance value of 3), and a low sensitivity resource located within 250–750 feet of the center line would generate a value Potential Impact Index of 2 (sensitivity value of 1 times a distance value of 2).

For the RLS/Class I data, therefore, the Potential Impact Index calculation is as follows:

- (Count of cultural resources/ survey acreage within 0–250 feet x sensitivity multiplier) x 3 +
- (Count of cultural resources/ survey acreage within 250–750 feet x sensitivity multiplier) x 2 +
- (Count of cultural resources/ survey acreage within 750 feet–5 miles x sensitivity multiplier)

The Potential Impact index scores, rounded to the nearest whole number, for the proposed and alternative routes are listed in Table 3-246. To interpret the Potential Impact Index scores, the range of data was categorized into four groups—low, medium, high, and very high—based on the distribution of the combined Class II and RLS/Class I Potential Impact scores. The range of scores for the two indexes is roughly similar, which allows them to be added together without biasing one class of data (RLS/Class I vs. Class II) over the other.

The random sample of segments for the 15 percent Class II sample survey prohibits comparison of certain alternatives with the corresponding segment of the Proposed Action. Because of the absence of surveyed segments for the Longhorn Variation and Flagstaff Alternatives and in the segment of the Proposed Action that would be compared to the Glass Hill Alternative indexes cannot be generated to compare the alternative with the Proposed Action in these three analysis areas. The alternatives would have no Class II index score, and as such, would have a lower Impact Score as a function of the lack of pedestrian survey data. These three are evaluated separately below. The distribution of the data into three clusters facilitated the creation of four categories of overall potential impact.

Table 3-246. Potential Impact Scores from the Class II and Reconnaissance Level Survey/Class I Data

Segment and Alternative	Class II Potential Impact Index	RLS and Class I Potential Impact Index	Combined Potential Impact Index	Potential Impact Assessment
Segment 1−Morrow-Umatilla				
Horn Butte Alternative	0	1	1	Low
Proposed Action Compared to Horn Butte	0	0	0	Low
Longhorn Variation Alternative	NS	2	–	Medium*
Proposed Action Compared to Longhorn Variation	0	0	–	Low*
Longhorn Alternative	3	6	9	High
Proposed Action Compared to Longhorn	0	1	1	Low
Segment 2−Blue Mountains				
Glass Hill Alternative	3	3	–	Medium*
Proposed Action Compared to Glass Hill	NS	3	–	Medium*
Segment 3−Baker Valley				
Timber Canyon Alternative	1	3	4	Medium
Proposed Action Compared to Timber Canyon	2	3	5	High
Flagstaff Alternative	NS	5	–	High*
Proposed Action Compared to Flagstaff	0	4	–	High*
Burnt River Mountain Alternative	2	4	6	High
Proposed Action Compared to Burnt River Mountain	10	6	16	Very High
Segment 4−Brogan Area				
Willow Creek Alternative	0	2	2	Medium
Proposed Action Compared to Willow Creek	1	2	3	Medium
Tub Mountain South Alternative	4	2	6	High
Proposed Action Compared to Tub Mountain South	1	2	3	Medium
Segment 5−Malheur				
Malheur A Alternative	1	1	2	Medium
Proposed Action Compared to Malheur A	1	2	3	Medium
Malheur S Alternative	2	2	4	Medium
Proposed Action Compared to Malheur S	2	1	3	Medium
Double Mountain Alternative	0	0	0	Low
Proposed Action Compared to Double Mountain	0	0	0	Low
Segment 6−Treasure Valley				
	3	**6**	**9**	**High**

Table Abbreviations: RLS = reconnaissance level survey; NS = No 15 percent Class II survey segments were included along route.

Table Note: Asterisk (*) indicates that the potential impact assessment for those alternatives is based on distribution of RLS/Class I index scores only (see text). Index scores could not be combined for those alternatives because no Class II survey was conducted along either the Proposed Action or alternative route.

Segment 1—Morrow-Umatilla

The results and implications of the Potential Impact Index study are discussed below for the three alternatives and corresponding portions of the Proposed Action located in Segment 1.

Horn Butte Alternative

Both the Horn Butte Alternative and the corresponding segment of Proposed Action are considered areas of potentially low-impact for cultural resources. Relatively few cultural resources were recorded in the analysis area for both the Proposed Action and alternative during the Class I and RLS-level investigations, and no cultural resources were recorded in the two 1-mile segments inventoried for both the Proposed Action and alternative during the Class II survey.

Longhorn Variation

The Class II sample survey did not include any segments in the Longhorn Variation Alternative. Therefore, the Potential Impact assessment is based solely on the RLS/Class I calculated Potential Impact indices, which suggest that the Longhorn Variation Alternative may have slightly higher potential impacts to cultural resources than the corresponding segment of the Proposed Action. This difference is mostly attributable to the higher number of cultural resources previously recorded within the Longhorn Variation Alternative analysis area. Overall, the Longhorn Variation Alternative possesses a medium Potential Impact Index score, while the corresponding segment of Proposed Action possesses a low Potential Impact Index score.

Longhorn Alternative

A pronounced difference in Potential Impact Index results is evident between the corresponding segment of the Proposed Action and Longhorn Alternative, where the combined index scores calculated for the Longhorn Alternative (9) is substantially higher than that calculated for the corresponding segment of the Proposed Action (1). This difference is in part attributable to the presence of a segment of the Oregon NHT—a highly sensitive resource—within 500 feet of the Longhorn Alternative centerline. In addition, a total of 62 resources were recorded in the analysis area for the Longhorn Alternative, as compared to only nine along the corresponding segment of Proposed Action. Overall, the Longhorn Alternative is considered to have a high potential for impacts to cultural resources; the Proposed Action segment is considered to have low potential for cultural resources impacts.

It is important to note that a TCP has been disclosed as existing within the analysis area for the Proposed Action in the Morrow-Umatilla County segment. The TCP, a First Foods gathering area, extends over a large portion of the Proposed Action analysis area from the project’s intersection with McKay Creek, west of the Blue Mountains to Clover Creek, northeast of the community of North Powder, Oregon.

Segment 2—Blue Mountains

The results and implications of the Potential Impact Index study are discussed below for the Glass Hill Alternative and adjacent portion of the Proposed Action in Segment 2.

Glass Hill Alternative

The Class II sample survey did not include any segments in segment of the Proposed Action that would be compared to the Glass Hill Alternative, and thus the Potential Impact Index comparative assessment is based solely on the RLS/Class I calculated Potential Impact Index. The Glass Hill Alternative and corresponding segment of the Proposed Action have similar index scores and have a medium potential for cultural resources impacts. The medium-level impact score for the Glass Hill Alternative is mainly attributed to the relatively high frequency of cultural resources recorded within the 750 foot-5 mile distance zone.

Segment 3—Baker Valley

The results and implications of the Potential Impact Index study are discussed separately below for three alternatives and corresponding portions of the Proposed Action in Segment 3.

Timber Canyon Alternative

The Timber Canyon Alternative possesses a medium Potential Impact Index, as compared to the high Potential Impact Index calculated for the corresponding segment of the Proposed Action. The higher Potential Impact score for the Proposed Action is based upon the presence of a segment of the high-sensitivity Oregon NHT within 250 feet of centerline.

Flagstaff Alternative

The Class II sample survey did not include any segments in the Flagstaff Alternative, and thus the Potential Impact assessment is based solely on the RLS/Class I calculated scores. The Flagstaff Alternative and corresponding segment of the Proposed Action are both considered to have a high potential to impact cultural resources. These high Potential Impact scores can be attributed to the presence of the Virtue Flat segment of the Oregon NHT within both the 0-250 and 250-750-foot distance zones of both routes. Most of the cultural resources recorded along both of these routes are located in the 750-foot-5 mile distance zone.

Burnt River Mountain Alternative

The Potential Impact Index for the Burnt River Mountain Alternative indicates a high potential for impacts to cultural resources; the score for the corresponding segment of Proposed Action indicates a very high potential for impacts. The high scores for these two routes are largely based on the presence of the Oregon NHT, several archaeological sites possessing human remains, and a historic church in the analysis area. Several moderate to moderate-high sensitivity cultural resources were recorded in the 0-250-foot distance zone during the Class II sample survey within a small survey area (one 1-mile segment), which increased the calculated density of sites and accounts for the higher level of potential impact.

Segment 4—Brogan Area

The results and implications of the Potential Impact Index study are discussed separately below for two alternatives and corresponding portions of the Proposed Action in Segment 4.

Willow Creek Alternative

Both the Willow Creek Alternative and corresponding segment of Proposed Action possess medium Potential Impact Index scores for cultural resources. The slightly higher Potential Impact Index score for the segment of Proposed Action (3) over the Alternative (2) is based on the six archaeological sites recorded during the Class II survey, compared to the alternative route for which no sites were recorded.

Tub Mountain South Alternative

The Tub Mountain South Alternative possesses a high Potential Impact Index score for cultural resources, while the corresponding segment of Proposed Action possesses a medium Potential Impact Index score. The difference in the two index scores derives from the presence of five low-moderate and moderate-sensitivity archaeological sites within the analysis area for the Tub Mountain South alternative, compared to only eight low-sensitivity sites within the analysis area of the Proposed Action. Sensitivity of cultural resources appears to be the factor driving the differences between the Proposed Action and alternative in this area, as the overall frequencies of resources recorded through Class I and Class II surveys and RLS are similar.

Segment 5—Malheur

The results and implications of the Potential Impact Index study are discussed separately below for three alternatives and corresponding portions of the Proposed Action in Segment 5.

Malheur A Alternative

Both the Malheur A Alternative and corresponding segment of the Proposed Action possess medium Potential Impact Index scores for cultural resources. Relatively comparable numbers of low- to medium-sensitivity archaeological sites were recorded during the Class II survey for both the Malheur A Alternative and Proposed Action, although nearly twice as many resources are included in the RLS and Class I data for the alternative. Few of these cultural resources, however, possess sensitivity values in the moderately-high and high ranges.

Malheur S Alternative

Both the Malheur S Alternative and corresponding segment of the Proposed Action possess medium Potential Impact Index scores for cultural resources. The few cultural resources recorded during the Class II survey for the alternative and Proposed Action possessed low sensitivity values, although substantially more cultural resources were included in the RLS and Class I data for the alternative.

Double Mountain Alternative

Both the Double Mountain Alternative and corresponding segment of Proposed Action possess very few previously recorded cultural resources. No cultural resources were recorded for either route during the Class II survey, even though two 1-mile sample segments were surveyed for both the alternative and Proposed Action. The RLS and Class I data included only two resources recorded within the 750-foot-5 mile distance zone for both routes. Both routes have a low Potential Impact Index score for cultural resources.

Segment 6—Treasure Valley

The Treasure Valley Segment produced a combined potential impact index score of 9 and is considered to have a high potential for impacts to cultural resource. The high score mostly stems from the presence of three NRHP-listed properties within the 750 feet–5 miles distance zones: a segment of the Oregon Trail, Bernard's Ferry and Farm, and the Poison Creek Stage Station.

Summary of Comparative Analysis of Proposed Action and Alternatives

Four of the segments yielded combined Class II and RLS/Class I Potential Impact Index scores of 0 or 1 (with a mode of 0),which were categorized as "low" potential impact to cultural resources; eight routes produced Potential Impact Index scores between 2 and 4 (with a mode of 3), which were categorized as "medium" potential impact; and three routes generated higher combined Potential Impact Index scores ranging from 5 to 9 (with a mode of six), which were categorized as "high potential" impact. One other alternative—the corresponding segment of the Proposed Action as compared to the Burnt River Mountain Alternative—produced a very high "outlier" score of 16, which is defined as an area with *"very high*" potential impacts.

As discussed above, no Class II survey was conducted along either the Proposed Action or alternatives in the Longhorn, Glass Hill and Flagstaff areas. Consequently, only the RLS/Class I Potential Impact Index can be used to assess potential impact to cultural resources in these areas, which required a means of assessing the Potential Impact index results based exclusively on the RLS/Class I Potential Impact Index. Among all segments of the Proposed Action and alternatives, the RLS/Class I index scores range from 0 to 6, with three "modes" or clusters of scores. Eight routes produced RLS/Class I index scores of 0 or 1 (with a mode of 0), which are again categorized as "low" potential impact to cultural resources; 13 alternatives produced scores between 2 and 4 (with a mode of 2), which are categorized as "medium" potential impact; and three routes produced scores of 5 or 6 (with a mode of 6) and are categorized as "high" potential impact. This approach was used to assess Potential Impact Index scores in the Longhorn, Glass Hill and Flagstaff areas only. The discussion below provides a detailed presentation of the Potential Impact Index scores for cultural resources for each of the six segments and the alternative and corresponding portions of Proposed Action within each one.

3.2.8.8 Design Features

The following design features are identified in Appendix C to avoid, reduce, or minimize direct impacts to cultural resources:

- CULT 1—All cultural resources work conducted for the Project would be performed by qualified archeologists.

- CULT-2—Where needed, cultural and historic sites would be flagged for avoidance prior to start of construction activities. Flagging would be removed once construction is completed in an area.
- CULT-3—To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, all workers would attend mandatory training on the significance of cultural resources and the relevant federal regulations intended to protect them.

In addition, the following steps would be taken to further reduce project effects to cultural resources:

- Modification of the Project and associated elements through micrositing and relocation to avoid identified cultural resources
- Erection of fencing around areas known to possess cultural resources or considered likely to possess buried cultural resources
- Monitoring of construction activities in order to ensure avoidance of identified cultural resources and to prevent disturbance in areas considered likely to possess buried cultural resource

The following design features are proposed to avoid, reduce, or minimize visual impacts on cultural resources:

- A surface finish for each galvanized steel lattice tower (single or double circuit) to produce a dulled finish that reduces surface reflectivity
- A surface finish for each single circuit weathered steel pole H-frame, which forms a rust-like appearance that can blend into some landscapes
- Conductors for the 500-kV and 230-kV lines that are made of aluminum/steel stranding with a nonspecular or diffuse finish

3.2.8.9 Mitigation Planning

In consultation with appropriate land-managing agencies and parties to the project PA (Appendix G), avoidance and mitigation measures specific to cultural resources would be developed and implemented to resolve adverse effects to resources determined NRHP eligible. The project PA also provides for the development of a Historic Properties Management Plan (HPMP), which will specify avoidance and protection measures, as well as mitigation, for NRHP-eligible cultural resources for construction, operations, maintenance, and potential decommissioning of the B2H Project. The HPMP will be approved prior to issuance of Notice to Proceed to resolve adverse direct, indirect and/or cumulative effects to NRHP-eligible cultural resources that may result from the project.

Mitigation measures for direct impacts to NRHP-eligible cultural resources will also be articulated in the approved HPMP for the project and may consist of archaeological data recovery and/or preparation of Historic American Building Survey (HABS), Historic American Engineering Record (HAER), or Historic American Landscape Survey (HALS) documentation. Other mitigation measures for direct, indirect, and/or cumulative impacts may include:

- Preparation of National Register nominations
- Interpretive and/or education materials in a variety of media formats
- Partnerships and funding for public programs geared at preservation and interpretation of resources
- Partnerships and funding for public archaeology projects
- Conservation easements
- Purchase of land for long-term protection of historic properties

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3.2.9 National Historic Trails

3.2.9.1 Introduction

The National Trails System Act, P.L. 90-543 (NTSA) of 1968, authorized the establishment of a system of trails to provide for public outdoor recreational opportunities and promote the preservation of access to the outdoors and the historic resources of the United States. Section 7(C) of the NTSA further establishes that the Secretary of the Interior is to consider the effects of agency actions that may be incompatible with the nature and purposes “for which such trails were established.” Two such Congressionally designated National Historic Trails (NHTs)—the Oregon NHT and—the Lewis and Clark NHT and two trails under study for designation (Study Trails)—the Meek Cutoff and Goodale’s Cutoff—are located in the analysis area. The following discussion describes the nature and purpose of these NHTs and the Study Trails and provides an analysis of impacts for the Proposed Action and alternatives.

This section of the EIS also presents the results of a detailed inventory and analysis of impacts for segments of the Oregon NHT and Study Trails located on BLM-administered lands in the analysis area. This inventory and impact assessment presented in Appendix B.8, was conducted in compliance with BLM Manual 6280, *Management of National Scenic and Historic Trails and Trails under Study or Recommended as Suitable for Congressional Designation (Public)* (BLM 2012). BLM Manual 6280 requires BLM to evaluate and disclose potential impacts of agency undertakings on national scenic or historic trails on BLM-administered lands.

It is important to note that as multi-use, specially designated properties, the analysis of impacts to NHTs is a multidisciplinary undertaking; an assessment of visual impacts to NHTs is also presented in Visual Resources (Section 3.2.7) and an assessment of both direct and indirect impacts to NHTs is presented in Cultural Resources (Section 3.2.8). As National Register of Historic Places-listed and -eligible historic properties, both previously documented and undocumented segments of NHTs will be recorded and evaluated for impacts through an intensive pedestrian survey within the direct area of potential effect (APE) and the results presented in the Final EIS.

3.2.9.2 Regulatory Framework

National Trails System Act

The NTSA, P.L. 90-543, enacted by Congress in 1968, authorized the establishment of the National Trails System, which includes four categories of trails: National Scenic Trails , NHTs, National Recreation Trails (NRTs), and Connecting or Side Trails. The Connecting or Side Trails serve to provide access to the other three categories of trail. When initially enacted, P.L. 90-543 established two trails, the Appalachian and Pacific Crest National Scenic Trails. Since that time, and through additional acts of Congress, 20 National Trails have been identified. Both of the NHTs present in the B2H Project analysis area- the Oregon NHT and Lewis and Clark NHT- were established in 1978 by P.L. 95-25.

The NTSA also directs the Secretary of the Interior or the Secretary of the Agriculture to administer and manage designated National Trails. Section 5(b) of the Act charges these two authorities with conducting feasibility studies to identify and designate additional National Trails, often referred to as "Study Trails." Two Study Trails are located within the analysis area: the Goodale's Cutoff and the Meek Cutoff. The feasibility of adding both of these trails to the Oregon NHT is currently being studied by NPS as part of the larger Four Trails Feasibility Study, authorized by Congress under the Omnibus Public Lands Act of 2009.

Section 7(c) of the NTSA charges the Secretaries to consider the effects of proposed actions on designated National Trails. The NTSA states that the Secretary charged with administration of the NHT may permit other uses along the trail provided that they do not "substantially interfere with the nature and purpose of the trail." Furthermore Section 7(c) specifies, "reasonable efforts shall be made to provide sufficient access opportunities to such trails and, to the extent practicable… avoid activities incompatible with the purposes for which such trails were established". In this regard, easements or rights-of-way granted by the Secretary of the Interior or Secretary of Agriculture must comply with laws applicable to the national park system and national forest system and conditions established in the easements or rights-of-way must reflect the policy and purposes of the NTSA (16 U.S.C. 1248).

NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act (16 U.S.C. 470) (NHPA) requires that the federal agency permitting the undertaking "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register" and provide the Advisory Council on Historic Preservation an opportunity to comment. Effect is defined in the implementing regulations for Section 106 (36 CFR §800.16(i)) as an "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." Section 106 requires the lead federal agency to consult with the State Historic Preservation Office, members of the public, affected Indian Tribes, and the Advisory Council on Historic Preservation throughout the process of identification, evaluation, and resolution of effects. Section 106 compliance is considered satisfied with the execution of the Programmatic Agreement, a legal document that describes the lead federal agencies' (in this case, the BLM) process of identifying and evaluating impacts to historic properties, and its plans for resolving adverse effects.

As NRHP-listed or eligible historic properties, the Oregon and the Lewis and Clark NHTs, and the Meek Cutoff and Goodale's Cutoff study trails are all properties that require evaluation of effect under Section 106. Segments and sites associated with the trail located in the direct and indirect area of potential effects established for the project will be assessed through a combination of desktop analysis, reconnaissance survey and intensive level survey associated with the Section 106 process. Project effects will be determined in consultation with tribes and parties to the Programmatic Agreement.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act governs the manner in which public lands shall be managed. This act, also known as the BLM Organic Act, establishes the agency's "multiple-use mandate to serve and protect future generations" (BLM and Office of the Solicitor 2001). The concept of "multiple-use" management is defined within the act (43 U.S.C. 1702) as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people."

BLM Manual 6280

BLM Manual 6280, Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation, states that National Environmental Policy Act analysis for a proposed action must (1) be able to identify reasonable alternative project locations with potentially less or no adverse impact, (2) document the resources, qualities, values, associated setting, and primary uses that support the nature and purposes for which the trail was designated, and (3) assess potential impacts to the landscape elements of designated NHTs. The policy also requires consideration of impacts to Study Trails and trails recommended as suitable for National Trail designation through the National Trail Feasibility Study. The National Park Service (NPS) is currently conducting a Feasibility Study/Environmental Assessment for additional alternate routes of the Oregon NHT under the NTSA - P.L. 90-543, as amended through P.L. 111-11, March 30, 2009 (NTSA).

Inventory and analysis for purposes of BLM Manual 6280 compliance is limited to the potentially affected segments of the Oregon NHT and Study Trails that are located on BLM-administered lands within the B2H Project analysis area. Detailed inventory of these segments and analysis of impacts is presented in Appendix B.8, and is summarized in Section 3.2.9.6.

BLM Manuals 8400 and 8431

BLM Manual 6280 directly references the BLM's Manual 8400, Visual Resource Management (VRM), in the process of completing the inventory of trails and Manual 8431, Visual Resource Contrast Rating, in any analysis of potential effect from proposed activities. The purpose of the BLM VRM system is to classify and manage visual resources on lands under its jurisdiction as outlined in BLM Manual 8400. The VRM system involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). In its planning process, the BLM weighs visual and competing resource values and designates the VRM Classes I thru IV, which represents a range of acceptable modifications within the landscape. Class I's objective is to preserve the existing character of the landscape and Class IV's objectives allow for major modifications.

The analysis stage of the VRM process involves assessing and disclosing the potential visual impacts from proposed activities (National Environmental Policy Act compliance) and then determining whether such impacts will meet the management objectives established for the area (plan conformance). To analyze and mitigate potential visual impacts associated with proposed activities, the BLM uses guidelines described in BLM Handbook H-8431. The degrees of contrast are categorized in a range including none, weak, moderate, or strong—where strong indicates a proposed activity will create contrast that demands attention, will not be overlooked, and is dominant in the landscape. Factors to be considered when applying the contrast criteria include distance, angle of observation, the duration of the view of the project components, relative size or scale, and spatial relationships.

3.2.9.3 Issues Identified for Analysis

The following issues were identified for analysis during scoping efforts related to the B2H Project:

- What physical alterations to significant viewsheds associated with the Oregon NHT and other historic trails will occur?
- Will the project affect the Oregon Trail Areas of Critical Environmental Concern?

3.2.9.4 Trail History

Oregon National Historic Trail

The numerous braided trails that comprise the Oregon NHT are actually a network of trail segments, river crossings, and sites that stretch across 2,282 miles of landscape and link what at the time was considered to be the western frontier to the settled lands of the east. Interconnecting with these braided transcontinental trail alignments are regional and local historic stage and freight roads.

The Oregon NHT represented the principal route of westerly migration across southern Idaho, Oregon, and northern California. The trail was originally blazed by Native Americans to meet their short and long distance transportation needs, and later refined by early Euro-American explorers and fur trappers, including members of the Astor expedition of 1811–1812 and the 1843 Frémont expedition. Although formal documentation has never occurred, the Shoshone-Paiute Tribes maintain that segments of the Oregon NHT generally follow the “Trail of Tears” followed by Shoshone and Paiute peoples during their forced march to Fort Simcoe, Washington.

The first wave of migration along the trail came during the 1830s as Protestant missionaries journeyed west to convert native populations in Idaho and Oregon (Hutchinson and Jones 1993). The Bartleson-Bidwell Party, led by Captain John Bartleson and John Bidwell, was the first true emigrant wagon train to attempt a wagon crossing from Missouri to California. However, when the wagon train arrived in the 19th-century military and trading outpost of Fort Hall in southeastern Idaho, the party fractured and only 34 members continued west accompanying missionaries along what would eventually become the Oregon NHT. Shortly after, in 1843, Captain John C. Frémont explored the region as part of a federal expedition, publishing accounts that would eventually become trail guides for emigrants traveling along the Oregon Trail (Hutchinson and Jones 1993). By the mid-1840s, the Oregon Trail had become a major, nationally recognized thoroughfare for emigrants making their way west.

Emigrants were generally driven by a mindset which held that it was Euro-Americans' destiny to settle and reclaim western lands for productive use, converting the natural resources of the Pacific Northwest (land, minerals, wildlife, and fisheries) into wealth. Native peoples, who maintained a subsistence strategy, moved seasonally along many travel routes that later formed the Oregon Trail to utilize available resources prior to historic emigrant use. The sudden influx of emigrants severely disrupted the subsistence patterns upon which Native American traditional lifeways depended.

Portions of the Oregon Trail continued to be used into the late 1890s. Use of the route declined once the transcontinental railroad, which provided faster, safer, and, usually, cheaper travel, was completed in 1869. Many well-traveled segments of the Oregon Trail were converted to modern highways and railroad segments, including several segments of I-84 in Idaho and Oregon. Numerous markers and memorials have been erected at burial sites, springs, emigrant camps, and inscription sites along these segments.

In the past decade, community interest and partnerships have led to the development, improvement, and rehabilitation of several recreation facilities and interpretive sites. Most notably are the construction of the National Historic Oregon Trail Interpretive Center (NHOTIC) in 1992 and ongoing rehabilitation of its historic landscape (BLM Preserve America 2004), as well as improvements to parking facilities and interpretive signage at several Oregon NHT interpretive sites. Malheur and Baker Counties have identified investments in tourism industries, attractions, and activities, particularly those related to the Oregon NHT, to further bolster the region's economy (BLM 2002).

Nature and Purpose

Management of the NHT and its associated resources is dictated through a Comprehensive Management and Use Plan (CMUP), which provides for coordinated action between federal, state, and private entities to provide for opportunities for use and interpretation along the various identified segments of the water, land, and associated motor routes. The Oregon Trail was designated a NHT on November 10, 1978, and is administered by the National Park Service (NPS) Although neither the NTSA nor the CMUP developed for the Oregon Trail by the NPS specifically define the "nature and purpose" of the Oregon NHT, the CMUP does describe the trail's "purpose and significance" (NPS 1999). According to the CMUP, the primary purposes of the Oregon NHT are "to identify, preserve, and interpret the sites, route, and history of the Oregon Trail for all people to experience and understand," and "to commemorate the westward movement of emigrants to the Oregon country as an important chapter of our national heritage" (NPS 1999).

The CMUP (NPS 1999) further states that the Oregon NHT is significant because:

- It was the first trail that demonstrated the feasibility of moving families, possessions, and cultures by wheeled vehicles across an area previously perceived as impassable;
- It was the corridor for one of the largest and longest emigration of families in the history of the United States;

- It is a symbol of American westward traditional migration embodied in traditional concepts of pioneer spirit, patriotism, and rugged individualism; and
- It strengthened the United States' claim to the Pacific Northwest.

A Multiple Property Documentation Form, prepared by Dr. Stephen Dow Beckham in 2012, defines a period of significance of 1840 to 1880 for the segments of the trail located in Oregon and eastern Idaho (Beckham 2012). This period begins with the commencement of overland emigrant travel through Oregon and concludes with completion of the Oregon Railway & Navigation Company's line between Portland and Umatilla, which ultimately led to a decline in trail use (Beckham 2012).

PRIMARY USES

The Oregon NHT CMUP (1999) identifies a variety of recreational uses including: interpretation; heritage tourism; media interest (which manifests itself in production of movies and documentaries); walking, biking; horseback riding; historic reenactments of the trails experience, including handcart and covered wagon expeditions; and commemorative activities such as trail visitation, driving along auto-tour routes and BLM backcountry byways, reading interpretive brochures and publications, and visiting associated museums and educational facilities.

The primary use or uses of the Oregon NHT as defined in BLM Resource Management Plans are as follows:

- Baker Resource Management Plan (BLM 1989): Sightseeing, historical interpretation, historic sightseeing, hiking, hunting, and interpretation.
- Southeastern Oregon Resource Management Plan (BLM 2002): Recreation management emphasizing public education and enjoyment of the Oregon NHT and its setting while protecting important cultural resource values, with specific management for semi-primitive motorized and roaded natural recreation.
- Owyhee Resource Management Plan (BLM 1999): Sightseeing, hiking, picnicking, and horseback riding.

Visitors wishing to follow the Oregon NHT can do so through a number of means such as hiking, biking, horseback riding, and driving along county roads and specially designated roadways. Many of the cross-country sections along the Oregon NHT provide recreational opportunities for motorized travel in a semi-primitive setting. Trail-related sites along the Old Oregon Trail Highway (OR Hwy 30) and I-84 provide easy access to recreational opportunities. Interpretive sites can be accessed throughout the year, with most visitations occurring between June and October (NPS 1989).

As the Oregon Trail Auto Tour Route (NHT), I-84 provides opportunities for visitors to enjoy the trails year round. The Auto Tour Route has been marked consistent with the provisions of the NTSA and existing state departments of transportation plans. The purpose of the Auto Tour Route is to heighten public awareness of the trails and to stimulate interest in visiting actual trail sites, segments, and interpretive facilities. The Route and NPS brochures guide visitors on a line of travel that parallels the designated route of the Oregon NHT to the extent possible, making it convenient for auto tourists to locate designated trail sites and trail segments (NPS 1999).

The Oregon BLM has designated three separate Areas of Critical Environmental Concerns to provide special management attention to protect the historic, cultural, and scenic values associated with the Oregon NHT. The Oregon Trail at Flagstaff Hill, Oregon Trail- Tub Mountain, and Oregon Trail-Birch Creek Areas of Critical Environmental Concerns are described in more detail in Section 3.2.6.

Lewis and Clark National Historic Trail

The approximately 3,700-mile long Lewis and Clark NHT was designated to commemorate the 1804–1806 route of the Corps of Discovery from Wood River, Illinois to the mouth of the Columbia River, near what is now Astoria, Oregon. Commissioned by President Thomas Jefferson in part to survey newly-acquired lands associated with the Louisiana Purchase, the Corp of Discovery was also charged with charting a navigable water transportation corridor through the continent. Led by Captain Meriweather Lewis and Second Lieutenant William Clark, the well-chronicled expedition was among the first to document Native American groups living along the Missouri and Columbia Rivers, as well as the natural resources in the area. Established in 1978 as one of the four original NHTs, the Lewis and Clark Trail represents a system of water and land based trails and auto tour routes that connect contemporary communities—including tribal communities—to the places associated with the expedition. The NHT also provides visitors with connections to the historical events associated with the Corps of Discovery through recreational, interpretive, and educational opportunities (NPS 2012).

The motor route is part of the Federal Highways Administration’s National Scenic Byways Program and is referred to as the Lewis and Clark Trail Scenic Byway. The segment of designated NHT in the analysis area follows Washington State Highway 14 (WA 14) and commemorates Lewis and Clark’s land-based return route.

The 2.2-mile-long segment of the Trail/Scenic Byway located in the B2H Project is only being considered in the analysis in terms of the visual APE (5 miles) for cultural resources which extends across the river into Washington (see Section 3.2.8 Cultural Resources). It is on private land on the north side of the Columbia River in Washington State and is identified in the 1982 CMUP as part of the “Columbia River Segment” of the NHT (NPS 1982).

Nature and Purpose

The nature and purpose of the Lewis and Clark NHT, as articulated in the NPS Foundation Document is “to commemorate the 1804 to 1806 Lewis and Clark Expedition through the identification; protection; interpretation; public use and enjoyment; and preservation of historic, cultural, and natural resources associated with the expedition and its place in U.S. and tribal history” (NPS 2012). The Lewis and Clark Trail Foundation Document further establishes that the Trail is nationally significant for

- Its commemoration of the 1804–1806 Corps of Discovery expedition;
- Its ability to provide context for furthering the understanding of the expedition and its outcomes;

- Its ability to connect contemporary communities and "demonstrate the continuum of human history…and subsequent relationships that developed among multiple cultures";
- Its retention of "characteristics and a sense of place" similar to that which would have been experienced by the Corps of Discovery;
- Its ability to educate the public about landscapes, resources and people encountered and documented by the Corps of Discovery; and
- Its diversity of landscapes, biological communities, and ecological zones.

Primary Uses

The primary uses of the Lewis and Clark NHT, as defined in the 1982 CMUP is to provide for public commemoration and interpretation of the historic events and "approximate retracement of the historic route" (NPS 1982). The CMUP acknowledges that much of the original features of the Corps of Discovery route have been altered by the damming and channelization of waterways, as well as by mining, farming, and urbanization. However, it also acknowledges that the Missouri and Columbia Rivers offer the public the best opportunity for continuous "retracement" of the route. The 1982 CMUP recommended a series of sites, trail segments, and motor routes to facilitate recreational and interpretive connectivity between landmarks of the expedition.

Goodale's Cutoff Study Trail

The Goodale's Cutoff Study Trail (also known as the Goodale/Sparta Trail) is also currently under feasibility study by the NPS as part of three alternate routes to be added to the Oregon NHT in Idaho and Oregon.

The Goodale's Cutoff to the Oregon Trail had its origins as a migration route used by Shoshone peoples and was popularized as an alternate route to the Oregon Trail by John Jeffrey, a river ferry operator, as early as 1852 (NPS n.d.) This Cutoff Trail left the Oregon Trail at Fort Hall, Idaho proceeding west through the Camas Prairie to the north of the Snake River Valley en route to where it rejoined the Trail at the Powder River, near Baker City. The Trail saw little emigrant travel until 1862 when a party hired guide Tim Goodale to lead them on the passage. Many of these emigrants were lured by the prospect of gold in the Boise Basin. Goodale successfully led the group of more than 1,000 persons from Fort Hall to Fort Boise. As tension increased between Shoshone and Bannock peoples and the emigrants along the main Oregon Trail, larger numbers of people began to use Goodale's alternate route (Dary 2004).

A northern alternate of Goodale's Cutoff continued into Oregon crossing Hells Canyon of the Snake River on the Brownlee Ferry to reach Baker Valley (McGill 2009). This alternative was purportedly used by prospectors, including George Grimes, who used the route to traverse between the Boise mines and Walla Walla. This route became known as the Brownlee Ferry Route (Wells 1972).

Nature and Purpose

The nature and purpose of the Goodale's Cutoff Study Trail has not yet been defined, as it is currently under feasibility study.

PRIMARY USES

As the Goodale's Cutoff Study Trail is currently under feasibility study and does not yet have a CMP, its primary uses have not been identified.

MEEK CUTOFF STUDY TRAIL

The NPS is currently conducting a feasibility study to add the Meek Cutoff to the Oregon NHT. The Meek Cutoff has been recognized by the Oregon State Legislature as one of five alternate routes of the historic alignment of the Oregon Trail that pass through the state of Oregon (NPS 1998).

The Meek Cutoff Study Trail was blazed as an alternate route of the Oregon Trail in 1845. In August of that year, fur trapper Stephen Meek proposed to take emigrants from Fort Hall to the Willamette Valley via a cutoff through the Cascade Mountains, which he alleged would reduce the overall length of travel by 150 miles. Roughly 1,000 persons decided to follow Meek on this Trail, which was anticipated to head directly west from the Oregon Trail's juncture with the Malheur River through central Oregon. Meek led the wagon train along the rough and rocky banks of the Malheur River, before heading over precipitous bluffs, which caused injury to both wagons and livestock. When the wagon train was not able to find water, the group forced Meek to abandon the westward route and turn north with the hopes of reaching The Dalles along the Columbia River. As the emigrants faced continued water and food shortages, the group divided into those who wanted to take a direct route to The Dalles and those who wanted to travel west to the Deschutes River to see if there was a passage over the Cascades and, if not, follow the Deschutes north towards The Dalles (Beckham 1991).

The wagon train ultimately split south of the Maury Mountains, with one faction following Meek northwest toward the Deschutes River, while the other group sought to travel due north towards the Columbia River. The northbound group, in particular, experienced bouts of illness and suffered from lack of food and water before inadvertently arriving at Sagebrush Springs on the Deschutes River where the second group joined them. Each wagon train had to be ferried across the river in order to continue the journey to The Dalles, which they reached in mid-October. While accounts vary, at least two dozen people lost their lives on the trip due to disease and hunger (Beckham 1991).

NATURE AND PURPOSE

The nature and purpose of the Meek Cutoff Study Trail has not yet been defined, as it is currently under feasibility study.

PRIMARY USES

As the Meek Cutoff Study Trail is currently under feasibility study and does not yet have a CMUP, its primary uses have not been identified.

3.2.9.5 METHODOLOGY

As previously noted, the National Register of Historic Places-listed and -eligible historic properties, both previously documented and undocumented segments of NHTs will be recorded and evaluated for impacts through a combination of desktop analysis, reconnaissance survey and intensive level survey performed associated with the Section 106 process. The survey results will be presented in the Final EIS. The historic and cultural setting of the trails will also be documented as part of the historic properties intensive survey. Potential impacts will be included in the Final EIS. .

Analysis Area

The analysis area for the NHTs and Study Trails is defined as the area within approximately 5 miles from either side of the Proposed Action and alternatives' centerlines (10 miles total), and includes all ancillary facilities related to the proposed project.

Visibility Analysis and Distance Zones

The visibility of the Proposed Action and the alternatives from the trails was developed using a GIS-based "bare-earth" viewshed analyses based on the centerlines of the Proposed Action and alternatives. This type of viewshed analysis is based on a digital elevation model and therefore reflects visible areas of the landscape based on existing landforms, without consideration of vegetation or built environment. Because availability of data regarding existing vegetation and built environment is limited, the bare-earth analysis makes the best use of available GIS digital elevation model data and also provides a worst-case scenario for visibility.

For this analysis, the foreground distance zone is defined as the area up to 0.5 mile from the Proposed Action or the alternatives, and the middleground distance zone is the area from 0.5 mile to 5.0 miles.

Impact Thresholds

The amount of visual contrast, dominance, and level of attraction introduced by project components would have an effect on the Oregon and Lewis and Clark NHTs and the Study Trails' views from the trails (also referred to as the trails' viewsheds). For this project-level analysis, the factors that were used to evaluate the changes to the viewsheds included the scale and spatial relationship and the duration of view of the Proposed Action and alternatives in relation to the trails (BLM 1986a).

Scale and spatial relationship evaluates the degree of prominence or contrast of the project components in relation to the surrounding landscape when viewed from the trails. Scale refers to the size of the project components relative to the features in the landscape. The larger the project components would appear, the less they would repeat the common elements and patterns in the surrounding landscape; that is, the project components would appear to dominate the landscape. In addition to scale, the arrangement or spatial relationship of landscape features can also affect the visual prominence of project components from sensitive viewing platforms. Consideration of the amount of visual contrast created is directly related to the amount of attention that is drawn to an element in the landscape. For this analysis, the contrast is assessed by comparing the Proposed Action (and alternatives) and the associated facilities with the major features within the existing setting of the trails.

The duration of view refers to how long (in miles) the project components would be seen from the trail. It is used to quantify the magnitude of potential impacts on the views from the trail. For example, the project components may dominate the setting adjacent to the trail but whether the project components can be seen for 1 mile or 10 miles would help better understand the magnitude of the potential impacts.

Table 3-247 defines the threshold of the impacts on the NHTs and Study Trails' existing landscape setting, i.e., the trail's viewshed in terms of two factors, (1) scale and spatial relationship of the project components as seen from along the trail and (2) the duration of the view of the project components associated with the Proposed Action and alternatives. The magnitude of impacts is defined as none, negligible, low, moderate, or high for each factor.

Table 3-247. Scale/Spatial Relationship and Duration of View Thresholds

Scale/Spatial Relationship	Duration of View
None/ Negligible Impact	
• No perceived change	• Not seen
• Project components would repeat elements/patterns common in the landscape. • Project components would not be visually evident.	• Project components would be seen from 20 percent or less of the total miles of the trail within the analysis area.
Low Impact	
• Project components would introduce elements/patterns common in the landscape. that would be visually subordinate • Project components would create low contrast as compared to other features in the landscape.	• Project components would be seen from 20 percent to 40 percent of the total miles of the trail within the analysis area.
Moderate Impact	
• Project components would introduce elements/patterns not common in the landscape. • Project components would be visually prominent in the landscape and would create moderate contrast as compared to other features in the landscape.	• Project components would be seen from 40 percent to 80 percent of the total miles of the trail within the analysis area.
High Impact	
• Project components would introduce elements/patterns that would be visually dominant and create strong contrast as compared to other features in the landscape.	• Project components would be seen 80 percent or greater of the total miles of the trail.

3.2.9.6 Affected Environment

Table 3-248, Table 3-249, Table 3-250, and Table 3-251 provide the total miles of the Oregon and Lewis and Clark NHTs and the Goodale's Cutoff and Meek Cutoff study trails located within the respective analysis areas of the Proposed Action and alternatives. These tables also indicate the distance along the trails that the proposed transmission lines and towers would be seen based on the visibility analysis as well as the number of crossings. The visibility and potential crossings of the trails by the proposed access roads are not included in the analysis. A general description of the location of the trails by B2H Project analysis segment with respect to the Proposed Action and alternatives along with an overview of land uses adjacent to the trails is also included in this section.

Table 3-248. Miles of Viewed Trail and Crossings of the Oregon NHT for Proposed Action and Alternatives

Alternative	Segment	Total Miles of Trail within Analysis Area	Total Miles of Trail with Views of Project Components	Total Number of Crossings
Proposed Action	1, 2, 3, 4, 5, and 6	227.0	173.3	11
Horn Butte Alternative	1	36.8	27.4	1
Longhorn Variation	1	15.6	13.8	1
Longhorn Alternative	1	12.9	9.9	1
Section of the Proposed Action Compared to the Horn Butte / Longhorn/ Longhorn Variation	1	36.9	27.4	1
Glass Hill Alternative	2	20.9	4.3	0
Section of the Proposed Action Compared to the Glass Hill Alternative	2	21.0	5.4	0
Flagstaff Alternative	3	20.1	9.5	1
Section of the Proposed Action Compared to the Flagstaff Alternative	3	20.6	18.0	1
Burnt River Mountain Alternative	3	31.3	22.2	2
Section of the Proposed Action Compared to the Burnt River Mountain Alternative	3	31.4	20.4	2
Timber Canyon Alternative	3	25.8	12.2	0
Section of the Proposed Action Compared to the Timber Canyon Alternative	3	57.6	46.05	2
Willow Creek Alternative	4	20.0	8.9	0
Section of the Proposed Action Compared to the Willow Creek Alternative	4	13.0	5.0	0
Tub Mountain South Alternative	4	37.6	28.2	2
Section of the Proposed Action Compared to the Tub Mountain South Alternative	4	13.7	7.5	0
Double Mountain Alternative	5	0	0	0
Section of the Proposed Action Compared to the Double Mountain Alternative	5	0	0	0
Malheur S Alternative	5	3.4	2.3	0
Malheur A Alternative	5	3.2	0.2	0
Section of the Proposed Action Compared to the Malheur A and Malheur S Alternatives	5	11.8	10.1	0

Table 3-249. Miles of Viewed Trail and Crossings of the Lewis and Clark NHT for Proposed Action and Alternatives

Alternative	Segment	Total Miles of Trail within Analysis Area	Total Miles of Trail with Views of Project Components	Total Number of Crossings
Proposed Action	1, 2, 3, 4, 5, and 6	0	0	0
Horn Butte Alternative	1	0	0	0
Longhorn Variation	1	2.2	1.4	0
Longhorn Alternative	1	1.8	1.2	0
Section of the Proposed Action Compared to the Horn Butte / Longhorn/ Longhorn Variation	1	0	0	0
Glass Hill Alternative	2	0	0	0
Section of the Proposed Action Compared to the Glass Hill Alternative	2	0	0	0
Flagstaff Alternative	3	0	0	0
Section of the Proposed Action Compared to the Flagstaff Alternative	3	0	0	0
Burnt River Mountain Alternative	3	0	0	0
Section of the Proposed Action Compared to the Burnt River Mountain Alternative	3	0	0	0
Timber Canyon Alternative	3	0	0	0
Section of the Proposed Action Compared to the Timber Canyon Alternative	3	0	0	0
Willow Creek Alternative	4	0	0	0
Section of the Proposed Action Compared to the Willow Creek Alternative	4	0	0	0
Tub Mountain South Alternative	4	0	0	0
Section of the Proposed Action Compared to the Tub Mountain South Alternative	4	0	0	0
Double Mountain Alternative	5	0	0	0
Section of the Proposed Action Compared to the Double Mountain Alternative	5	0	0	0
Malheur S Alternative	5	0	0	0
Malheur A Alternative	5	0	0	0
Section of the Proposed Action Compared to the Malheur A and Malheur S Alternatives	5	0	0	0

Table 3-250. Miles of Viewed Trail and Crossings of the Goodale's Cutoff Study Trail for Proposed Action and Alternatives

Alternative	Segment	Total Miles of Trail within Analysis Area	Total Miles of Trail with Views of Project Components	Total Number of Crossings
Proposed Action	1, 2, 3, 4, 5, and 6	23.6	17.6	2
Horn Butte Alternative	1	0	0	0
Longhorn Variation	1	0	0	0
Longhorn Alternative	1	0	0	0
Section of the Proposed Action Compared to the Horn Butte / Longhorn/ Longhorn Variation	1	0	0	0
Glass Hill Alternative	2	0	0	0
Section of the Proposed Action Compared to the Glass Hill Alternative	2	0	0	0
Flagstaff Alternative	3	12.7	2.8	0
Section of the Proposed Action Compared to the Flagstaff Alternative	3	23.6	17.6	2
Burnt River Mountain Alternative	3	0	0	0
Section of the Proposed Action Compared to the Burnt River Mountain Alternative	3	0	0	0
Timber Canyon Alternative	3	41.7	30.3	2
Section of the Proposed Action Compared to the Timber Canyon Alternative	3	23.6	17.6	2
Willow Creek Alternative	4	4.1	1.1	0
Section of the Proposed Action Compared to the Willow Creek Alternative	4	0	0	0
Tub Mountain South Alternative	4	6.5	4.2	0
Section of the Proposed Action Compared to the Tub Mountain South Alternative	4	0	0	0
Double Mountain Alternative	5	0	0	0
Section of the Proposed Action Compared to the Double Mountain Alternative	5	0	0	0
Malheur S Alternative	5	0	0	0
Malheur A Alternative	5	0	0	0
Section of the Proposed Action Compared to the Malheur A and Malheur S Alternatives	5	0	0	0

Table 3-251. Miles of Viewed Trail and Crossings of the Meek Cutoff Study Trail for Proposed Action and Alternatives

Alternative	Segment	Total Miles of Trail within Analysis Area	Total Miles of Trail with Views of Project Components	Total Number of Crossings
Proposed Action	1, 2, 3, 4, 5, and 6	13.1	11.8	1
Horn Butte Alternative	1	0	0	0
Longhorn Variation	1	0	0	0
Longhorn Alternative	1	0	0	0
Section of the Proposed Action Compared to the Horn Butte/ Longhorn/ Longhorn Variation	1	0	0	0
Glass Hill Alternative	2	0	0	0
Section of the Proposed Action Compared to the Glass Hill Alternative	2	0	0	0
Flagstaff Alternative	3	0	0	0
Section of the Proposed Action Compared to the Flagstaff Alternative	3	0	0	0
Burnt River Mountain Alternative	3	8.2	4.1	0
Section of the Proposed Action Compared to the Burnt River Mountain Alternative	3	0	0	0
Timber Canyon Alternative	3	0	0	0
Section of the Proposed Action Compared to the Timber Canyon Alternative	3	0	0	0
Willow Creek Alternative	4	0	0	0
Section of the Proposed Action Compared to the Willow Creek Alternative	4	0	0	0
Tub Mountain South Alternative	4	2.5	0	0
Section of the Proposed Action Compared to the Tub Mountain South Alternative	4	0.9	0	0
Double Mountain Alternative	5	0	0	0
Section of the Proposed Action Compared to the Double Mountain Alternative	5	0	0	0
Malheur S Alternative	5	11.9	5.2	0
Malheur A Alternative	5	11.9	5.2	0
Section of the Proposed Action Compared to the Malheur A and Malheur S Alternatives	5	11.5	3.8	0

SEGMENT 1—MORROW-UMATILLA

Segment 1 encompasses a portion of the Proposed Action, the Longhorn Variation, and the Horn Butte, and Longhorn alternatives. Neither the Goodale's Cutoff nor Meek Cutoff study trails are located within this segment.

OREGON NATIONAL HISTORIC TRAIL

The Oregon NHT enters Segment 1 approximately 2 miles west of the unincorporated community of Cecil, Oregon. The Trail's alignment in the western section of Segment 1 is generally west to east, trending slightly north. Existing development adjacent to the Trail in this portion of the B2H Project analysis area is predominantly agricultural, with fallow fields, numerous paved and two-track roads, transmission lines and towers, wind farms, and scattered ranches. Just north of Immigrant Lane and continuing east to Bombing Range Road, the Trail crosses the Boardman Grasslands Conservation Area, which consists of relatively undisturbed native grasses and shrubs.

The Proposed Action and Horn Butte Alternative would largely parallel the Trail, crossing it once approximately 0.6 miles south of Immigrant Lane and 4.6 miles east of Cecil. The Longhorn Variation alignment would generally parallel Bombing Range Road and would cross the trail once approximately 6.2 miles south of Homestead Lane. Similarly the Longhorn Alternative would cross the Oregon NHT once, approximately 5.6 miles south of Homestead Lane. The National Register of Historic Places-listed Wells Spring segment of the Oregon NHT begins immediately west of Longhorn Variation and Longhorn Alternative. With the exception of the Boardman Grasslands Conservation Area to the west of the Longhorn Variation, agriculture dominates the land use surrounding the Trail within the analysis areas of the Longhorn Alternative and Longhorn Variation.

LEWIS AND CLARK NATIONAL HISTORIC TRAIL

Within Segment 1, the Lewis and Clark NHT follows the same alignment as State Route 14 (also known the Lewis and Clark Trail Scenic Byway), a predominantly southeast to northwest trending road that generally parallels the northern bank of the Columbia River. The area to the north of the Trail has been developed for agricultural use and consists of agricultural fields, modern home sites and associated outbuildings, transmission lines, and numerous paved and unpaved roads. There are similar land uses south of the Columbia River within the analysis areas of the Longhorn Variation and Longhorn Alternative including development associated with the community of Boardman, Oregon. The Longhorn Variation and Longhorn Alternative alignments would run perpendicular to, but approximately 5 miles southwest of the Lewis and Clark NHT. The Trail only slightly overlaps the northernmost extent of the analysis areas.

SEGMENT 2—BLUE MOUNTAINS

Segment 2 encompasses a portion of the Proposed Action and one alternative, the Glass Hill Alternative, which is located in the approximate midpoint of this segment. The Lewis and Clark NHT and Goodale's Cutoff and Meek Cutoff study trails are not present within the segment.

Oregon National Historic Trail

The alignment of the Oregon NHT within Segment 2 begins approximately 4.2 miles northwest of the unincorporated community of Meacham, Oregon and continues to the southeast past the unincorporated communities of Kamela and Hilgard. Between Meacham and Kamela, the Trail crosses the I-84 corridor twice. This portion of the Oregon NHT also traverses the forested hills of the Blue Mountains. This forested area contains a series of unnamed two-track and off-road vehicle roads, but is otherwise undeveloped. Just south of Hilgard, the Trail turns to the west and crosses I-84 and Highway 244 (also known as the Ukiah-Hilgard Highway) before veering to the southeast. This portion of the Oregon NHT passes to the west of La Grande and along the western edge of the Grande Ronde River valley. Development adjacent to the Trail in this area is predominantly agricultural and urban development associated with the city of La Grande. After La Grande, the Trail turns south toward the community of North Powder (in Segment 3) and crosses over I-84 three times. Between La Grande and North Powder, the Oregon NHT traverses across areas of agricultural uses as well as areas of relatively undisturbed lands with the exception

The Glass Hill Alternative and Proposed Action would roughly parallel the Oregon NHT within Segment 2. The Glass Hill Alternative would not intersect the Trail; however, approximately 14.7 miles south of La Grande, the Proposed Action would cross the Oregon NHT.

Segment 3—Baker Valley

Segment 3 encompasses a portion of the Proposed Action and three alternatives: the Timber Canyon, Flagstaff, and Burnt River Mountain alternatives. The Lewis and Clark NHT and the Meek Cutoff Study Trail are not present within this segment.

Oregon National Historic Trail

The Oregon NHT enters Segment 3 near the unincorporated community of North Powder, Oregon and continues generally in a southeasterly direction toward Baker City. The Trail crosses agricultural fields in Baker Valley and Missouri Flat and continues south along the western and southern flanks of Flagstaff Hill, where the NHOTIC is located. It then crosses Oregon Route 86 and Virtue Flat. South of Virtue Flat the Oregon NHT turns east where it parallels the I-84, Old US 30, and the Union Pacific Railroad to the west of the unincorporated community of Durkee. Approximately 2.7 miles southeast of Durkee, the Trail curves to the east and near the southern end of the Durkee Valley exits the segment at Weatherby.

The Proposed Action would cross the Oregon NHT three times, once approximately 1.1 miles south of the NHOTIC and 9 miles northwest as well as 4.9 miles southeast of Durkee. The Flagstaff and Burnt River Mountain would each cross the Trail once, approximately 1.3 miles northwest of the NHOTIC and 6.2 miles of Durkee, respectively. The Timber Canyon Alternative would not intersect the Oregon NHT.

Goodale's Cutoff Study Trail

Two generally east-west trending alignments of the Goodale's Cutoff Study Trail stretches from the unincorporated community of Richland to Baker City. The two Study Trail alignments generally parallel

Oregon Route 86. Within this portion of Segment 3, existing development adjacent to the Study Trail consists of transmission lines and towers, scattered ranches and agricultural lands, and numerous paved and unpaved roads.

The Proposed Action would run perpendicular to the Trail and crosses both Trail alignments within the sage steppe hills of Virtue Flat, approximately 1.2 miles southeast of the NHOTIC and Flagstaff Hill. The Timber Canyon Alternative would also run perpendicular to the Trail and would cross both Study Trail alignments in the eastern portion of Segment 3. This alternative would cross the northern alignment of the Trail approximately 1.1 miles east of the unincorporated community of New Bridge and would intersect the southern alignment of the Trail approximately 2.4 miles west of Richland. Agriculture and rural residential development are common land uses surrounding the Trail within the analysis area of Timber Canyon Alternative.

Segment 4—Brogan Area

Segment 4 encompasses a portion of the Proposed Action along with two alternatives, the Willow Creek and Tub Mountain South alternatives. The Lewis and Clark NHT and the Goodale's Cutoff and Meek Cutoff study trails are not present within this segment.

Oregon National Historic Trail

From the northern portion of Segment 4, the Oregon NHT runs general south from Weatherby to Lime to Vale. The Trail parallels I-84, crossing it once approximately 1.3 miles south of Weatherby. The surrounding land is predominately undeveloped, but there are paved and unpaved roads and scattered ranches as well as transmission lines and towers that traverse the Trail. Between Lime and Huntington, the Oregon NHT generally follows Burnt Rive and Business US Route 30 (Oregon Trail Boulevard). The Trail continues south and crosses Willow Creek near Vale. Until reaching the agricultural lands associated with the creek, the land surrounding the Trail is predominately undeveloped. Closer to Vale the Oregon NHT passes through the city of Vale and the associated infrastructure, residential, and commercial development.

The centerlines for both the Willow Creek Alternative and the Proposed Action would be located within a mile to the east of the Oregon NHT. The Proposed Action would largely parallel the Trail and would cross it once approximately 1.4 miles southeast of Weatherby and just north of I-84. To the south of the unincorporated community of Lime, the Willow Creek Alternative would generally parallel the Trail and I-84; however, this alternative would veer to the southwest and away from the Trail approximately 5.7 miles south of Huntington. The Tub Mountain South Alternative would also generally parallel I-84 to the south of Huntington and cross the Trail twice, approximately 5.2 miles south of Huntington and 6.7 miles north of Vale.

Segment 5—Malheur

Segment 5 encompasses a portion of the Proposed Action along with three alternatives: the Malheur A, Malheur S, and Double Mountain alternatives. The Oregon and Lewis and Clark NHTs and Goodale's Cutoff Study Trail are not present in this segment.

Meek Cutoff Study Trail

A segment of the Meek Cutoff Study Trail is present within the northern portion of Segment 5. The Trail, which generally parallels State Route 20 (also known as the Central Oregon Highway) to the north, enters Segment 5 approximately 8.9 miles west of Vale and continues east. In this area, the land use is predominately agriculture and associated farm buildings and paved and unpaved roads. The Trail does follow a portion of the Malheur River where the landscape setting surrounding the Trail is strongly enclosed and development is limited to gravel and two-track roads, the canal, and an abandoned railroad alignment.

The Proposed Action would cross the Trail just west of where it veers north to follow the incised Malheur Canyon landform, approximately 11.6 miles west of Vale. The Malheur A, Malheur S, and Double Mountain Alternatives are also located within Segment 5; however, these alternatives would be to the south of the Meek Cutoff Study Trail and would not intersect the Trail.

Segment 6—Treasure Valley

Segment 6 includes only the Proposed Action. The Lewis and Clark NHT and Goodale's Cutoff and Meek Cutoff study trails are not present within this segment.

Oregon National Historic Trail

An intact alignment of the South Alternate of the Oregon NHT is present in the southern portion of Segment 6. The Trail enters the segment to the west of Rippee Island and parallels the Snake River and State Highway 78 (also known as the Owyhee Highway) for several miles before passing the agricultural community of Wilson, Idaho and turning east. Development in this area is predominantly agricultural, with clustered agricultural buildings, structures, and fields, utility poles and lines, and paved and gravel roads located along the Trail.

The Proposed Action would parallel the Trail to the west, but would not intersect it.

3.2.9.7 Environmental Consequences

No Action Alternative

Under the No Action Alternative, the agencies would not issue a permit for the construction or operations of the B2H Project on federally managed lands. This Alternative would result in no direct or indirect Project-related impacts on identified NHT or Study Trail resources. Other effects associated with continued access, recreation, and similar actions would continue at the current rate, and would be the responsibility of the land managing agencies.

Design Features

Refer to Section 3.2.6 (Land Use, Agriculture, Recreation, Transportation), Section 3.2.7 (Visual Resources), Section 3.2.8 (Cultural Resources) of this Draft EIS regarding design features considered during the evaluation of environmental consequences. These design features were assumed to be part of the project design and standard best management practices that would be executed during the construction and maintenance of the Proposed Action and alternatives, and were therefore considered during the evaluation of environmental consequences.

Impacts Common to Alternatives

Impacts common to all action alternatives would include impacts associated with construction, operation and maintenance. Construction of the Proposed Action and/or alternatives would potentially introduce temporary impacts on visual resources, recreational experiences, and historic and cultural settings, as well as permanent impacts on historic properties. The Proposed Action and alternatives would also include temporary impacts such as tower construction, line stringing, equipment operation, equipment/material transport, construction-related dust, and material stockpiling. These impacts would attract attention within the analysis area, resulting in short-term impacts on visual resources and historic and cultural settings. Ground disturbing activities related to construction and access road development/improvement could result in permanent adverse impacts on unidentified NHT-associated historic and cultural resources, particularly those that are buried.

Once the transmission line has been constructed, the presence of large transmission towers would potentially introduce permanent impacts on visual resources, recreational experiences, and historic and cultural settings. Transmission line replacement/re-stringing, potential transmission tower replacement, ongoing vegetative clearing within the right-of-way, and routine transmission line maintenance (and associated vehicular access) could attract attention within the analysis area. Auditory impacts associated with transmission line “buzzing” or “humming” would also detract from the emote sense of feeling contributing to the historic character of NHT resources.

Development of the Proposed Action and/or alternatives may result in short-term and long-term indirect impacts. Vegetative clearings and permanent access roads would create opportunities for people to access previously inaccessible areas. This could result in trampling of additional vegetation and additional impacts on the resources such as increased erosion. Implementation of the project would also provide lands adjacent to the alignment with stronger connectivity to the power grid, which may result in increased energy development along the alignment. These indirect impacts could lower the scenic quality and further diminish the historic settings of the NHTs and Study Trails.

Increased use of existing and new or improved access roads may likewise lead to adverse impacts on cultural resources through increased artifact collection and/or looting, and potential vandalism to historic and cultural sites, and trail segments. Alternately, increased use of access roads could indirectly result in beneficial impacts on recreational resources because the new routes could provide and/or increase access to NHT-associated recreational resources. Recreational use of the trails may also decrease in areas where the scenic quality and historic setting are impacted.

Summary of Direct and Indirect Impacts

Table 3-252 and the following narrative summarize the residual direct and indirect impacts on the Oregon and Lewis and Clark NHT and the Goodale’s Cutoff and Meek Cutoff Study Trails from the construction and operation of the Proposed Action and alternatives. The definition of the threshold of the magnitude of impact for the scale/spatial relationship and duration of view factors are provided in Table 3-252.

Oregon National Historic Trail

The Proposed Action and all the alternatives with the exception of the Double Mountain Alternative would contain some portion of the Oregon NHT within their respective analysis areas. The Glass Hill, Malheur A, and Malheur S alternatives as well as Willow Creek Alternative would have substantially less impact on the landscape setting as viewed from the Oregon NHT than the Proposed Action and remaining alternatives. The Proposed Action would cross the Oregon NHT 11 times, the Burnt River Mountain and Tub Mountain South alternatives would cross the trail two times, and the Longhorn Variation and the Horn Butte, Longhorn, and Flagstaff alternatives would cross the Trail once.

The magnitude of the miles of the Oregon NHT that would be visible within the foreground of the Proposed Action and the alternatives would range from negligible to moderate (up to 80 percent). From the middleground of the Trail (0.5 miles to 5 miles), the Proposed Action, Longhorn Variation, and the Horn Butte, Glass Hill, Flagstaff, Willow Creek, Tub Mountain South, Malheur S, and Malheur A alternatives would be visible greater than 80 percent within the portion of the Oregon NHT within the analysis areas of the respective alternatives. The Proposed Action, Longhorn Variation, and Longhorn, Horn Butte, Timber Canyon, Flagstaff, Burnt Mountain, and Tub Mountain South alternatives would dominant the landscape in the foreground of the trail and create strong visual contrast as compared to other features in the existing landscape. The Proposed Action, Longhorn Variation, and Longhorn, Horn Butte, Timber Canyon, Flagstaff, Burnt Mountain, and Tub Mountain South alternatives would have direct, long-term adverse impacts to the visual setting with the foreground of the Oregon NHT.

Lewis and Clark National Historic Trail

The Longhorn Alternative and Longhorn Variation would have identical overall low to moderate impacts to this relatively small portion (2.2 miles) of the Lewis and Clark NHT in Washington. In either alternative, the project components would be visible for the entire length of the byway within the respectively analysis areas. The portion of the byway where the Longhorn Alternative and Longhorn Variation would be visible represents approximately 0.3 percent of the total length of the designated route within the respective analysis areas. Therefore, the Longhorn Alternative and Longhorn Variation would not compromise the landscape setting of the Lewis and Clark Trail NHT in the analysis areas of the Longhorn Alternative or Longhorn Variation.

Goodale's Cutoff Study Trail

The Proposed Action and the Timber Canyon, Flagstaff, Willow Creek, and Tub Mountain South alternatives would be visible from the Goodale's Cutoff Study Trail. The Proposed Action and the Timber Canyon Alternative would cross the trail twice each; the remaining three alternatives would only parallel the trail. The project components associated with the Proposed Action and the Timber Canyon Alternative would dominant the landscape in the foreground of the trail and create strong visual contrast as compared to other features in the existing landscape. The Willow Creek and Tub Mountain South alternatives would not be seen from the foreground of the trail. However, both of these alternatives would be visible for more than 80 percent of the length of the trail in the middleground within these two alternatives' analysis areas. The project components of the Tub Mountain South Alternative would create a moderate level of contrast and the Willow Creek Alternative would not be visually evident. The Proposed Action and The Timber Canyon would have direct, long-term adverse impacts to the visual setting for the relatively small portion of the trail within the foreground of the Proposed Action (approximately 4.9 miles) and Flagstaff Alternative (approximately 1.0 mile) within the respective analysis areas.

Meek Cutoff Study Trail

The Proposed Action and the Malheur A and Malheur S alternatives would be the only alternatives that would impact the Meek Cutoff Study Trail within their respective analysis areas. The project components associated with the Malheur A and Malheur S alternatives would not be visually evident in the existing landscape setting, but the alternatives would be seen for more than 80 percent of the total miles of Trail within the analysis areas. The Proposed Action would create strong contrast in the foreground and moderate contrast in the middleground, and would be seen less than either of the Malheur alternatives from the trail. The Proposed Action would cross the Trail once and would have direct, long-term adverse impacts to the landscape setting for the 2.8 miles of the Trail that would be visible within the foreground of the Proposed Action.

Table 3-252. Summary of Impacts on Views from National Historic and Study Trails for Each Alternative

Trail (total miles of trail)	Alternative (total miles of the trail within analysis area)	Scale/Spatial Relationship		Duration of View	
		FG	MG	FG	MG
Goodale's Cutoff Study Trail	Proposed Action including 138/69-kV Rebuild Alternative (23.6 miles)	H	L	L	M
	Timber Canyon Alternative (41.7 miles)	H	M	L	M
	Section of Proposed Action Compared to the Timber Canyon Alternative (23.6 miles)	H	M	L	N
	Flagstaff Alternative including 230-kV Rebuild (12.7 miles)	M	L	L	M
	Section of Proposed Action Compared to the Flagstaff Alternative including 230-kV Rebuild (23.6 miles)	H	M	L	M
	Willow Creek Alternative (4.1 miles)	None	N	None	H
	Tub Mountain South Alternative (6.5 miles)	None	M	None	H
Lewis & Clark National Historic Trail	Longhorn Alternative (1.8 miles)	None	N	None	H
	Longhorn Variation (2.2 miles)	None	N	None	H

Trail (total miles of trail)	Alternative (total miles of the trail within analysis area)	Scale/Spatial Relationship		Duration of View	
		FG	MG	FG	MG
Meek Cutoff Study Trail	Proposed Action including 138/69-kV Rebuild Alternative (13.1 miles)	H	M	L	M
	Section of Proposed Action Compared to the Tub Mountain South Alternative (0.9 mile)	None	None	None	None
	Malheur A Alternative (11.9 miles)	None	N	None	H
	Malheur S Alternative (11.9 miles)	None	N	None	H
	Section of Proposed Action Compared to the Malheur A and Malheur S Alternatives (11.5 miles)	None	N	None	H
Oregon National Historic Trail	Proposed Action including 138/69-kV Rebuild Alternative (194.4 miles)	H	L	N	H
	Longhorn Alternative(12.9 miles)	H	M	L	M
	Section of Proposed Action Compared to the Horn Butte/Longhorn/Longhorn Variation (36.7 miles)	H	M	N	H
	Longhorn Variation (15.6 miles)	H	L	N	H
	Horn Butte Alternative(36.8 miles)	H	M	N	H
	Glass Hill Alternative (20.9 miles)	None	N	None	H
	Section of Proposed Action Compared to the Glass Hill Alternative (21.0 miles)	N	L	N	H
	Timber Canyon Alternative (25.8 miles)	H	L	N	M
	Section of Proposed Action Compared to the Timber Canyon Alternative (57.6 miles)	H	M	L	M
	Flagstaff Alternative including 230kV Rebuild (20.1 miles)	H	N	N	H
	Section of Proposed Action Compared to the Flagstaff Alternative including 230-kV Rebuild (20.6 miles)	H	M	N	H
	Burnt River Mountain Alternative (31.3 miles)	H	L	L	M
	Section of Proposed Action Compared to the Burnt River Mountain Alternative (31.5 miles)	H	L	M	M
	Willow Creek Alternative (20.0 miles)	None	N	None	H
	Section of Proposed Action Compared to the Willow Creek Alternative (13.0 miles)	None	N	None	H
	Tub Mountain South Alternative (37.6 miles)	H	L	N	H
	Section of Proposed Action Compared to the Tub Mountain South Alternative (13.7 miles)	None	L	None	H

Trail (total miles of trail)	Alternative (total miles of the trail within analysis area)	Scale/Spatial Relationship		Duration of View	
		FG	MG	FG	MG
	Malheur S Alternative (3.4 miles)	None	N	None	H
	Malheur A Alternative (3.2 miles)	None	N	None	H
	Section of Proposed Action Compared to the Malheur A and Malheur S Alternatives (11.8 miles)	None	L	None	H

Table Abbreviations: FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green).

3.2.9.8 Compliance With BLM Manual 6280

As identified in the Regulatory Framework Section (3.2.9.2) above, BLM Manual 6280 requires that potential impacts associated with proposed actions are disclosed with respect to NHTs and Study Trails on BLM-managed lands. In general terms, the programmatic policy associated with BLM Manual 6280 suggests that the evaluation of potential impacts should consider whether or not a proposed action would:

- "affect the BLM's ability to effectively manage the nature and purposes of the trail, trail resources, qualities, values, uses, and associated settings"
- "require a major relocation of the National Trail Management Corridor"
- "affect the characteristics that made the trail worthy of designation"
- "affect the Federal Protection Components, including high-potential historic sites or high potential route segments"
- "affect designated NHT properties, including remnants and artifacts from the associated period of use that may be eligible or listed on the National Register"
- "limit the agency's ability to manage the trail for the purpose of identifying and protecting the historic route and its historic remnants and artifacts for public use and enjoyment, including interpretation, education, appreciation, and vicarious experiences"

More specifically, BLM Manual 6280 provides separate guidance regarding the analysis of both NHTs and Study Trails. Analysis of potential impacts to NHTs include the following considerations—some of which are specifically required when a National Trail Corridor has not yet been established (as is the case with the Oregon NHT):

- Determine if the proposed action is consistent with the purpose for which the Trail was designated; determine if the proposed action would "substantially interfere" with the nature and purposes of the trail
- Complete a viewshed analysis to evaluate whether the proposed action is within the viewshed
- If the proposed action is likely to cause adverse impact, complete a BLM National Trail inventory and assessment, and identify alternative locations with less or no adverse impacts

- Identify any adverse impacts to the nature and purposes, resources, qualities, values, associated settings, and primary use or uses of the trails

Analysis of potential impacts to Study Trails includes the following considerations:

- “describe the values, characteristics, and settings of trails”
- “analyze and describe any impacts of the proposed action on the values, characteristics, and settings of trails”
- “consider an alternative that would avoid adverse impacts to the values, characteristics, and settings of the trail”

In order to comply with the requirements and guidance provided in BLM Manual 6280, an inventory and analysis of potential impacts was completed for the trails located on lands managed by the BLM from which the project components would be visible. The trails that are on BLM-administered lands are the Oregon NHT and the Goodale’s Cutoff and Meeks Cutoff Study Trails. The portion of the Lewis and Clark NHT within the B2H Project analysis area is not located on BLM-administered lands. The inventory and analysis provide the necessary information and data to satisfy the considerations listed above. The full inventory and analysis covers portions of the Oregon NHT, and Goodale’s Cutoff and Meeks Cutoff Study Trails—and is included as Appendix B.8. The following summary provides a brief overview of the methodology and impacts of the NHT and study trail analysis.

SUMMARY OF BLM MANUAL 6280 ANALYSIS METHODOLOGY

Impacts on the Oregon NHT and Study Trails were assessed in terms of the potential effects on the three trail-related resources (visual resources, historic and cultural resources, and historic and cultural settings) within the BLM Manual 6280 analysis area. This analysis area is consistent with the area identified and explained in detail for the NHT inventory and analysis in Appendix B.8. Analysis methodologies associated with the trail-related resources are described below. Table 3-253 is an abbreviated version of the threshold table from Appendix B.8 and has been formatted to include the most critical NHT/study trail analysis thresholds. Per the inventory guidelines provided in BLM Manual 6280 (3.4, A), the inventory area has been divided into analysis units (AUs) by trail segment. The AUs that were developed for this inventory were based on breaks in landform that serve to define historic and contemporary user experience.

VISUAL RESOURCE ANALYSIS

In broad terms, impacts on visual resources refer to the change in aesthetic values resulting from modifications to the landscape. Because BLM Manual 6280 does not specifically identify methodology for evaluation of impacts on visual resources related to the viewshed of the identified trail segments, the methodology for evaluating visual impacts in this assessment was based on the general concepts of visual contrast evaluation as outlined in the BLM Handbook H-8431-1, Visual Resource Contrast Rating (BLM 1986).

Although the VRM system does not specifically discuss analysis of NHTs and Study Trails, the trails and trail segments represent sensitive linear viewing platforms or key observation points (KOPs) from which viewers could potentially see the project components. Impacts for this analysis were therefore assessed in terms of changes to the landscape that could be seen by viewers along the BLM-managed trail segments identified in the NHT inventory. These changes were identified using the thresholds identified in Section 3.2.7 (Visual Resources). An abbreviated version is provided in Table 3-253. The impacts associated with spatial relationships were considered as the key indicator of the potential impacts on visual resources because they represent the overall degree to which the project components would be noticeable from the trail segments, as well as the perceived degree of contrast from trail users on the trail segments.

The magnitude of change related to visual resources (sensitive viewers) in the BLM Manual 6280 assessment is divided into impacts associated with visibility conditions, angles of observation, quantifications of view, and spatial relationships. The impacts “adverse to the nature and purpose and primary uses” of the Oregon NHT were specifically based on the spatial relationships for each linear platform.

Cultural and Historic Resource Analysis

To evaluate potential impacts on the qualities and values of the Oregon NHT and Study Trails, cultural resource studies completed for the B2H Project were consulted to determine the condition, National Register of Historic Places eligibility, and character-defining features of the trail segments and their associated cultural and historic resources. These findings were then compared with observations made during the field inventory to determine what impacts, if any, the project would have on National Register of Historic Places -eligible trail segments and cultural and historic resources located within the B2H analysis area.

Cultural and historic resources were evaluated according to the impact thresholds provided in Table 3-253. These thresholds are based on the alteration of character-defining features, the diminishment to aspects of National Register of Historic Places integrity (i.e., location, design, setting, materials, workmanship, feeling, and association), and whether or not the degree of alteration would constitute an adverse effect that would or would not be amenable to minimization or mitigation.

In general, if there was no alteration to the character-defining features of the trail segments and no diminishment to aspects of National Register of Historic Places integrity, then the impact threshold of the project was considered to be “none.” In comparison, an impact threshold of “high” was assigned to trail segments and associated cultural and historic resources if the character-defining features of the trail were subject to both indirect and direct impacts which severely altered the aspects of National Register of Historic Places integrity to such a degree that the National Register of Historic Places eligibility of the trail segments was adversely affected and could not be minimized and/or mitigated. As the field assessment associated with the draft NHT inventory report did not include comprehensive physical documentation of trail resources per professional cultural resources standards, impacts on trail segments for which an National Register of Historic Places eligibility assessment has not yet been made, a sixth category, of “undetermined” was assigned.

Cultural and Historic Setting Analysis

The analysis of cultural and historic settings is dependent on both the existing historic character of the landscape and the degree to which the historic character would be affected by the project. Based on observations made during the field inventory, the historic setting of each trail segment was categorized in the draft NHT inventory report as either retained or diminished. Generally, the historic setting of a trail segment was considered to be retained if the segment was located in a pristine wilderness area with no visible modern intrusions, such as transmission lines, and/or buildings and structures. In comparison, if the trail segment was located within a utility corridor or right-of-way, or the surrounding landscape was dominated by modern intrusions, then the historic setting of the trail segment was considered to be diminished. Cardinal directions were also taken into account, making it possible for the historic setting of a trail segment to be diminished in some views, and retained in others.

Changes in historic setting were then compared to the historic character of the landscape to determine what impact, if any, the project would have on the trail segment. These impacts on cultural and historic settings were evaluated based on the thresholds provided in Table 3-253. If the cultural and historic setting of the trail segment was retained and there was no perceived change to the historic character of the landscape, then the impact of the project to the cultural and historic setting of the trail segment was considered to be “none.” However, if the historic character of the landscape was considered to be diminished, one of four impact thresholds were assigned—negligible, low, moderate, or high—based on the perceived level of impact that the project would have on the surrounding landscape of the trail segment. For example, the project was considered to have a negligible impact on the cultural and historic setting of a trail segment if intact supporting or contributing elements of the historic character of the landscape would be *subtly modified*. Similarly, if historic character of the landscape was considered to be *notably*, *substantially*, or *severely modified* by the project, then the trail segments were assigned low, moderate, and high impact thresholds, respectively.

Assessing Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

According to BLM Manual 6280, the NHT analysis must identify “any adverse impacts on the nature and purposes” or “primary use or uses” of the NHT. This requirement does not apply to Study Trails because they do not have an established nature and purpose or primary uses. For this assessment, it was assumed that low and very low adverse impacts would not specifically have a considerable impact on the nature and purpose or primary uses of the Oregon NHT. Potential impacts on the nature and purpose and primary uses of the Oregon NHT for this analysis were therefore based on the assumption that both moderate and high magnitudes of impact would be specifically “adverse to the nature and purpose and primary uses” because they represent substantial and severe impacts, respectively. These impacts would vary for the Proposed Action and alternatives based on the three identified trail-related resources (visual resources, historic and cultural resources, and historic and cultural settings). For this reason, the number of impacts “adverse to the nature and purpose and primary uses” are included in the summary of impacts for the Proposed Action and each alternative.

The BLM Manual 6280 analysis described the potential impacts associated with the Proposed Action and each of the alternatives. This analysis included disclosure of potential impacts regarding the No Action Alternative. Under the No Action Alternative, the agencies would not issue a permit for the construction or operations of the B2H Project on federally managed lands. The No Action Alternative would result in no direct or indirect Project-related impacts on identified NHT or Study Trail resources. Other effects associated with continued access, recreation, and similar actions would continue at the current rate, and would be the responsibility of the land managing agencies.

Table 3-253. Abbreviated National Trails System Impact Thresholds

Visual Resources (Spatial Relationship)	Cultural and Historic Resources	Cultural and Historic Settings
None • No perceived change	**None** • No alteration of the character defining features of the Trail and/or associated resources; no diminishment to aspect of National Register of Historic Places (NRHP) integrity (location, design, setting, materials, workmanship, feeling, setting and association).	**None** • No perceived change to the historic character of the landscape.
Negligible • Project components would repeat elements/patterns common in the landscape. • Project components would not be visually evident.	**Negligible** • Character defining features of the Trail and/or associated resources would be subtly altered with some degree of diminishment to aspects of NRHP integrity (location, design, setting, materials, worksmanship, feeling, setting, and association.). However, this degree of alteration would not constitute an "adverse effect" to the NRHP-listed and/or eligible property.	**Negligible** • Existing historic character of the landscape is diminished. • Intact elements that support or contribute to the historic character of the landscape would be **subtly** modified by the project.
Low • Project components would introduce elements/patterns common in the landscape that would be visually subordinate • Project components would create **low** contrast as compared to other features in the landscape.	**Low** • Character defining features of the Trail and/or associated resources would be **notably** altered with some degree of diminishment to aspects of NRHP integrity (location, design, setting, materials, worksmanship, feeling, setting, and association.) However, this degree of alteration would not constitute an "adverse effect" to the NRHP-listed and/or eligible property.	**Low** • Existing historic character of the landscape is diminished. • Intact elements that support or contribute to the historic character of the landscape would be **notably** modified by the project.

Visual Resources (Spatial Relationship)	Cultural and Historic Resources	Cultural and Historic Settings
Moderate • Project components would introduce elements/patterns not common in the landscape. • Project components would be visually prominent in the landscape and would create **moderate** contrast as compared to other features in the landscape.	**Moderate** • Character defining features of the Trail and/or associated resources would be **substantially** altered with a degree of diminishment to aspects of NRHP integrity (location, design, setting, materials, worksmanship, feeling, setting, and association) such that the NRHP eligibility of the Trail and/or associated resources would be adversely affected. The adverse effect would be indirect and amenable to minimization and/or mitigation.	**Moderate** • Existing historic character of the landscape is diminished. • Intact elements that support or contribute to the historic character of the landscape would be **substantially** modified by the project.
High • Project components would introduce elements/patterns that would be visually dominant and create **strong** contrast as compared to other features in the landscape.	**High** • Character defining features of the Trail and/or associated resources would be **severely** altered with a degree of diminishment to aspects of NRHP integrity (location, design, setting, materials, worksmanship, feeling, setting, and association) such that the NRHP eligibility of the Trail and/or associated resources would be adversely affected. The adverse effect would be either direct or indirect and not amenable to minimization and/or mitigation.	**High** • Existing historic character of the landscape is intact. • The historic character of the landscape would be **severely** modified by the project.

Summary of Impacts per BLM Manual 6280

The BLM Manual 6280 impact analysis identifies how the B2H Project would affect the trail-specific visual resources with respect to the viewshed, historic and cultural resources, and historic and cultural settings identified by the NHT inventory. The impact analysis provides data to enable identification of the project alternatives locations that result in lesser degrees of impact, including identification of adverse impacts on the nature and purposes and primary uses of the Oregon NHT for each alternative location. Because the nature and purposes and primary uses of the Study Trails have not been established, there would be no associated impacts. Determination of conformance with National Trail VRM Classes is not included in this analysis because no specific “National Trail VRM Classes” have been established for the Oregon NHT or Study Trails within the analysis area.

The following summary provides the key potential impacts for the Proposed Action and affected alternatives as well as the comparison of the alternatives to the Proposed Action, i.e., the compare-to sections of the Proposed Action for the Oregon NHT and the two Study Trails. The Proposed Action is described for its entire length and is not broken down by segment with the exception of the compared-to sections for each of the alternatives.

There would be no direct or indirect impacts related to the BLM Manual 6280 analysis for the Horn Butte, Longhorn, Double Mountain, Malheur A, and Malheur S alternatives and the Longhorn Variation because the project components associated with these alternatives would not be visible from the trail segments on BLM-managed lands. Each of the remaining alternatives, Glass Hill, Timber Canyon, Burnt River Mountain, and Tub Mountain South, are discussed in the segments in which they would be located.

The potential impacts are arranged as they relate to the most critical NHT analysis factors—visual resources (sensitive viewers), historic and cultural resources, historic and cultural settings, and the number of high and moderate adverse impacts on the nature and purpose and primary uses of the Oregon NHT. Similarly, the impacts on the Meek Cutoff and Goodale's Cutoff Study Trails are summarized with the exception of the quantity of adverse impacts on the nature and purpose and primary uses of the Study Trails because the nature and purposes and primary uses of the Study Trails have not been established. There would be no direct or indirect impacts related to the BLM Manual 6280 analysis for the Burnt River Mountain for either Study Trails because the project components associated with these alternatives would not be visible from the trail segments on BLM-managed lands. Detailed data and explanations of impacts can be found in Appendix B.8.

Proposed Action (including 138/69-kV Rebuild Alternative) – Oregon National Historic Trail

Visual Resources

- Within the foreground (up to 0.5 mile from the trail), the Proposed Action would visually dominate people's view from 6 of the 23 trail specific KOPs and would therefore experience high impacts associated with the spatial relationship of the project components.
- Within the middleground (0.5 mile to 5 miles from the trail), people at 2 of the 23 trail specific KOPs would experience high impacts associated with the spatial relationship of the project components because these components would visually dominate people's views from these platforms.

Cultural and Historic Resources

- No impacts were identified to previously recorded, trail-related cultural resources on BLM lands in the general area between Bodie and Hilgard (Blue Mountain Analysis Unit). The 0.23-mile-long section of the NRHP-eligible Blue Mountain Crossing segment of the Oregon NHT on BLM land is located approximately 1.1 miles east of the Proposed Action and would not be directly impacted; however, moderate impacts on the historic setting of the trail are anticipated. As the National Register of Historic Places eligibility of the trail traces in the general area between Bodie and Hilgard have not yet been evaluated, impacts on these trail segments could not be determined.

  None of the previously-recorded, trail-related historic and cultural resources located on BLM land in the general vicinity of the two Oregon Trail Flagstaff Hill and White Swan ACECs (Flagstaff Hill/Virtue Flat Analysis Unit) would be impacted by the Proposed Action. The NHOTIC, identified as high-potential historic site No. 106 in the NPS CMUP, is situated on top of Flagstaff Hill and overlooks the transmission line, which is sited approximately 1.1 miles to the southeast. Additionally, the NRHP-eligible Flagstaff Hill and White Swan Segments of the Oregon NHT, and their contributing resources—the Meeker Marker and Flagstaff Hill Monument—are all located approximately 0.5 mile from the centerline of the Proposed Action. The magnitude of impact on the historic and cultural setting of the trail segments in these locations is expected to be high. However, impacts on the trail south of the Oregon Trail ACEC – Flagstaff Hill could not be determined as the NRHP eligibility for this segment has not yet been evaluated.

- No impacts were identified to previously recorded, trail-related cultural resources in the general vicinity of area between Quartz and Huntington (Burnt River Canyon Analysis Unit). The three segments of the Oregon NHT on BLM land that were previously recommended eligible for inclusion in the National Register of Historic Places are located within the Straw Ranch I and II ACECs and along Swayze Creek would not be directly affected; however, moderate impacts on the historic setting of the trail segments between Oxman and Nelson are anticipated. Additionally, the segment of trail within the Chimney Creek ACEC, as identified by the State of Oregon as a Goal 5 Resource, is situated 0.9 mile to the west of the Proposed Action and would not be impacted by the transmission line. As the historic setting within the Chimney Creek ACEC at has already been diminished, the magnitude of impact on the historic setting is considered to be low. As the National Register of Historic Places eligibility of the trail traces in the general area between Quartz and Huntington have not yet been evaluated, impacts on these trail segments could not be determined.
- No impacts were identified to previously recorded, trail-related cultural resources in the general vicinity of Adrian (South Alternative Analysis Unit). A short segment of the 126-mile-long, National Register of Historic Places -eligible South Alternate Route (10OE6025) of the Oregon NHT is located on BLM land approximately 0.4 mile to the southwest of the Proposed Action (at its closet location) and would not be directly impacted. However, it is possible that the historic setting of the trail in this location may be impacted by construction of the transmission line. Impacts on segments of the Oregon NHT that are not considered part of the South Alternate Route could not be determined, as the National Register of Historic Places eligibility of these segments have not yet been evaluated.

Cultural and Historic Settings

- Generally, the trail segments on BLM land in the general vicinity between Bodie and Hilgard (Blue Mountain Analysis Unit).are representative of their historic setting. As planned, the Proposed Action would intersect the braided trail segments in six of locations, although none of these crossings occur on BLM land. The historic setting of the trail segments in this area has already been diminished by modern intrusions. As such, the impact on the historic and cultural setting in these locations would generally be low. Near Bodie, however, impacts would vary greatly based on the portion of the trail trace under consideration. The trail trace in this location has not been impacted by modern intrusions near the southern portion of the trail trace where the setting opens into a pocket of grassland. The portion of the trail trace within the open grassland setting would experience open views of the project components at a close distance of less than one tenth of a mile. Construction of the Proposed Action would therefore have a high magnitude of impact on the historic and cultural setting of the Oregon NHT in this location.

- In general, the numerous braided trail segments in the general vicinity of the two Oregon Trail Flagstaff Hill and White Swan ACECs (Flagstaff Hill/Virtue Flat Analysis Unit) have retained their integrity of historic setting. Although the Proposed Action crosses BLM land in three principal areas, including the White Swan ACEC, the transmission line would not physically impact any of the BLM-managed trail segments. The transmission line is located in closest proximity to area just south of the Oregon Trail ACEC – Flagstaff Hill, approximately 0.6 mile to the west. In this location, the integrity of the historic setting is retained as the surrounding sage steppe landscape remains largely the same as it did during the historic period. For these reasons, construction of the Proposed Action in this location would have a moderate magnitude of impact on the historic setting of the Oregon NHT. Historic setting would be retained where the congressionally designated route and its multiple travel paths span the Flagstaff Hill and White Swan ACECs. Although modern development is visible from all of these ACEC locations, these modifications are subordinate to the historic scenic values and are representative of their original setting. As such, the magnitude of impact on the historic and cultural setting of the Oregon NHT in these locations would also be moderate.

- Despite existing impacts from modern development and erosion, 13 segments of the Oregon NHT on BLM land in the general vicinity of area between Quartz and Huntington (Burnt River Canyon Analysis Unit) have retained their historic setting. The Proposed Action, as planned, would intersect with the braided trail segments and congressionally designated route of the Oregon NHT in six areas, although none of these crossings occur on BLM land. However, the trail segments located within the Straw Ranch I and II ACECs, respectively do not show evidence of having been impacted by subsequent use or alterations. In particular, several sets of trail ruts in excellent condition are retained in the vicinity of Straw Ranch I. For these reasons, the magnitude of impact on the historic and cultural setting of the Oregon NHT would range from moderate to high magnitude of impact in this portion of the trail.

- As previously discussed, the historic setting of the Oregon NHT resources in the general vicinity of Adrian (South Alternative Analysis Unit) has diminished integrity due to residential and agricultural development. As planned, the Proposed Action would not intersect with either the congressionally designated route or its parallel alignment; only an approximately 0.7-mile-long section of the trail on BLM land near the southern end of the Proposed Action is located within 0.5 mile of the centerline. Due to the distance of the proposed transmission line to the trail routes, as well as the presence of numerous modern intrusions in this location, construction of the transmission line would have a low magnitude of impact on the historic and cultural setting of the Oregon Trail within the southern end of the analysis area.

Summary of High and Moderate Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be 13 high and 20 moderate impacts associated with the Proposed Action on the nature and purpose and primary uses of the Oregon NHT.

Proposed Action (Including 138/69-kV Rebuild Alternative) – Meek Cutoff Study Trail

Visual Resources

- Within the foreground (up to 0.5 mile from the trail), the Proposed Action would not be visible from the Meek Cutoff Study Trail.
- Within the middleground (0.5 mile to 5 miles from the trail), people would experience low impacts associated with the spatial relationship of the project components because the Proposed Action would create a low contrast as compared to other features in the landscape.

Cultural and Historic Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified. A small section of the trail on private land in Malheur County, Oregon was evaluated during the 2013 RLS. The newly-recorded segment of trail, assigned site number B2H-MA-003, was recommended not eligible for listing in the NRHP due to lack of integrity as the site was previously impacted by road construction (Tetra Tech 2013:13). Due to this recommendation, the magnitude of impact resulting from construction of the Proposed Action would be none.

Cultural and Historic Settings

- One section of the Meek Cutoff trail is located within the 5-mile analysis area of the Proposed Action. Although this portion is located within an incised canyon, the transmission line would be visible as it is sited roughly 1.3 miles to the west. Desktop analysis suggests that this segment of trail has been only minimally impacted by modern development. Although intrusions are visible from multiple vantage points along the trail, the majorities of these features is at a higher elevation than the trail segment and are thus not visible or are shielded from view by the steep canyon walls and surrounding hills. For these reasons, as well as the proximity of the Proposed Action to the trail segment, construction of the transmission line would have a moderate magnitude of impact on the historic and cultural setting of the Meek Cutoff at this location.

Proposed Action (Including 138/69-kV Rebuild Alternative) – Goodale's Cutoff Study Trail

Visual Resources

- The portion of the Goodale's Cutoff Study Trail that would be within the analysis area of the Proposed Action lies within the Baker Valley to Powder River geographic area. Within the foreground in the Baker Valley to Powder River area, the Proposed Action would be predominantly skylined, with unobstructed views of the project components, and would dominate the visual setting. For these reasons, as well as the proximity of the project components to the trail segment, the Proposed Action would have a high level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail.
- Within the middleground, the Proposed Action would be equally backdropped against rolling hills and skylined, and would be partially obstructed. The project components would begin to attract attention and be visually subordinate within the visual setting. The Proposed Action would have a moderate level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail.

Cultural and Historic Resources

- A segment of the trail on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during the 2013 RLS of the analysis area. Although this segment was not evaluated as part of this effort, it was recommended for further study during the ILS (Tetra Tech 2013:13). This segment, however, was not evaluated because it is not within the 5-mile analysis area of the Proposed Action.

Cultural and Historic Settings

- In many of the areas where trail segments are present on BLM land, modern intrusions have diminished the integrity of historic setting. In total, approximately ten of the roughly 31 trail segments would fall within the 5-mile analysis area of the Proposed Action. Of these trail segments, six would be subject to visual impacts from the proposed transmission line. As previously discussed, many of the trail alignments parallel modern roads, and intrusions associated with agricultural development and ranching have impacted the historic setting of trail segments in the eastern and westernmost portions of the 5-mile analysis area. Because the historic setting of the trail segments along Ruckles Creek and Ruckles Creek Road (in the Baker Valley to Lower Powder Valley geographic area) has been only minimally impacted by modern development, construction of the Proposed Action in these locations would have a moderate magnitude of impact on the historic and cultural setting of these trail segments.

Segment 1 – Morrow - Umatilla

There would be no direct or indirect impacts related to the BLM Manual 6280 analysis for the Horn Butte, and Longhorn alternatives and the Longhorn Variation as well as the Proposed Action within Segment 1, because the project components associated with these alternatives and the Proposed Action would not be visible from the trail segments on BLM-managed lands.

Segment 2—Blue Mountains

Glass Hill Alternative – Oregon National Historic Trail

Visual Resources

- The portion of the Oregon NHT Trail that would have views of the Glass Hill Alternative is just south of Hilgard. Within the foreground, this alternative would be predominantly skylined and would dominate the visual setting. For these reasons, as well as the proximity of the project components to the trail segment, the Glass Hill Alternative would have a high level of contrast when viewed from this portion of the Oregon NHT.
- Project components associated with the Glass Hill Alternative would not be seen within the middleground area from the Oregon NHT.

Historic and Cultural Resources

- The Glass Hill Alternative would potentially impact the Whiskey Creek Site in the BLM's Oregon NHT Management Plan (Oman 1989:64). This alternative would cross the unevaluated site approximately 0.2 mile east of its western terminus on BLM land. Although the NRHP eligibility of the trail trace and stone marker have not yet been determined, the landscape and scenery in this area is both beautiful and panoramic and these rare resources would be impacted by construction of this alternative. Impacts on character defining features of the Trail and/or associated resources would be undetermined for the linear platform.

Historic and Cultural Settings

- Of the numerous braided trail segments of the Oregon NHT located on BLM land in the general vicinity between Bodie and Hilgard (Blue Mountain Analysis Unit), only one alignment is located within the 5-mile analysis area of the Glass Hill Alternative. The historic setting at this location has been diminished by numerous modern intrusions including gravel and two-track roads, fences, and an existing H-frame transmission line. Additionally, it is unclear if the trail trace in this location, which has been permanently altered by the construction of Mill Canyon Road, represents the remains of a historic wagon road or an alternate route of the Oregon NHT. Due to this modern development and the unclear association of the trail segment to the Oregon NHT, the magnitude of impact related to the Glass Hill Alternative would be none.

Summary of High and Moderate Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be one high impact associated with this alignment, for a total of one adverse impact on the nature and purpose and primary uses of the Oregon NHT.

Section of the Proposed Action Compared to Glass Hill Alternative- Oregon NHT

Visual Resources

- Similar to the Glass Hill Alternative.

Historic and Cultural Resources

- Similar to the Glass Hill Alternative.

Historic and Cultural Settings

- As previously discussed, the historic setting of the trail segment has already been diminished by modern intrusions including fence lines, two-track roads, I-84 (which is both visible and audible), and clusters of ranch buildings. As such, the impact on the historic and cultural setting in this location would generally be low.

Nature and Purpose and Primary Uses of the Oregon National Historic Trail

There would be four high adverse impacts associated with this alignment, for a total of one adverse impact on the nature and purpose and primary uses of the Oregon NHT

Segment 3—Baker Valley Segment

Timber Canyon Alternative – Oregon National Historic Trail

Visual Resources

- Project components associated with the Timber Canyon Alternative would not be seen within the foreground area from the Oregon NHT.
- The portion of the Oregon NHT Trail that would have views of the Timber Canyon Alternative is in the general vicinity of area between Quartz and Huntington (Burnt River Canyon Analysis Unit). Within the middleground, this alternative would be predominantly unobstructed but would not be visual evident. For these reasons, the Timber Canyon Alternative would have a negligible level of contrast when viewed from this portion of the Oregon NHT.

Historic and Cultural Resources

- Previously recorded trail-related cultural resources include four NRHP eligible segments of the Oregon NHT identified in the 2013 RLS as Straw Ranch I and II, Swayze Creek, and Powell Creek (Tetra Tech 2013). As none of these resources are located within the 5-mile analysis area of the Timber Canyon Alternative, the magnitude of impact on these cultural resources was not evaluated.

Historic and Cultural Settings

- The trail segments on BLM land in the general vicinity of area between Quartz and Huntington (Burnt River Canyon Analysis Unit) have generally retained their scenic value and are representative of their historic setting. As previously discussed, the integrity of historic setting of the Oregon NHT south of Durkee has been notably diminished by the development of agricultural fields, industrial and circulation features, and power transmission structures. As such, the magnitude of impact resulting from construction of the Timber Canyon Alternative would be none as the historic and cultural setting at this location would not be affected.

Number of Adverse (High and Moderate) Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be no high or moderate impacts on the nature and purpose and primary uses of the Oregon NHT.

Timber Canyon Alternative – Goodale's Cutoff Study Trail

Visual Resources

- The portion of the Goodale's Cutoff Study Trail that would be within the analysis area of the Timber Canyon Alternative lies within the Lower Powder Valley to Eagle Valley and Eagle Valley to Posey Valley geographic areas. Within the foreground in Lower Powder Valley to Eagle Valley area, the Timber Canyon Alternative would be predominantly backdropped against the landforms with intermittent views of the project components. The Timber Canyon Alternative would not be visible in the foreground of the Eagle Valley to Posey Valley area. For these reasons, as well as the proximity of the project components to the trail segment, the Timber Canyon Alternative would have a moderate level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail in the Lower Powder Valley to Eagle Valley area but none in the Eagle Valley to Posey Valley area.
- Within the middleground, the Timber Canyon Alternative would be predominantly backdropped against landforms within the Lower Powder Valley to Eagle Valley and Eagle Valley to Posey Valley geographic areas—with intermittent views of the project components. The project components would not attract attention within the visual setting of these geographic areas. The Timber Canyon Alternative would not be visually evident when viewed from this portion of the Goodale's Cutoff Study Trail.

Historic and Cultural Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified within the four general areas of Goodale's Cutoff Study Trail. A segment of the trail on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during the 2013 reconnaissance level survey of the analysis area. Although this segment was recommended for further study during the inventory level survey, the magnitude of impact on the Goodale's/Sparta Trail would be none based on the proposed location of the Timber Canyon Alternative.

Historic and Cultural Settings

- Within the analysis area of the Timber Canyon Alternative, modern intrusions have already diminished the existing integrity of setting in many areas where trail segments are present on BLM land. While modern intrusions have impacted the historic setting of these trail segments, the segments largely retain their historic and cultural setting. As such, construction of the Timber Canyon Alternative would have a moderate magnitude of impact on the historic and cultural setting of the Goodale's Cutoff Study Trail segments located on BLM land within the Lower Powder Valley to Eagle Valley and the Eagle Valley to Posey Valley geographic areas.

Section of the Proposed Action Compared to Timber Canyon Alternative – Oregon National Historic Trail

Visual Resources

- The portion of the Oregon NHT Trail that would have views of the section of the Proposed Action that is equivalent to the Timber Canyon Alternative would experience a range of impacts from negligible to high in both the foreground and middleground. When this portion of the Proposed Action would be predominantly skylined, it would dominate the visual setting and create a high level of contrast, as would be the case in several locations between Quartz and Huntington. Overall, this section of the Oregon NHT would not see this portion of the Proposed Action; however, when it would be visible from the trail, the impact would be a moderate level of contrast.

Historic and Cultural Resources

- None of the previously-recorded, trail-related historic and cultural resources located on BLM land in the general vicinity of the two Oregon Trail Flagstaff Hill and White Swan ACECs (Flagstaff Hill/Virtue Flat Analysis Unit) would be impacted by this section of the Proposed Action that would be comparable to the Timber Canyon Alternative. The NRHP-eligible Flagstaff Hill and White Swan Segments of the Oregon NHT, and their contributing resources—the Meeker Marker and Flagstaff Hill Monument—are all located approximately 0.5 mile from the route's centerline of this section of the Proposed Action. The magnitude of impact on the historic and cultural setting of the trail segments in these locations is anticipated to be high, however. As such, construction of the route would have a moderate magnitude of impact on the NRHP-eligible trail segments in these locations.

Historic and Cultural Settings

- As planned, this portion of the Proposed Action would cross the congressionally designated route and trail segments southwest of the NHOTIC through the open and expansive Virtue Flat landform. Although the route crosses BLM land in three principal areas, including the White Swan ACEC, the transmission line would not directly impact any of the BLM-managed trail segments. The route is located in closest proximity in the area south of the Oregon Trail ACEC – Flagstaff Hill. In this general location, the integrity of the historic setting is retained as the surrounding sage steppe landscape remains largely the same as it did during the historic period, with the only modern intrusions to the setting occurring to the south and east. For these reasons, construction of the route in this location would have a moderate magnitude of impact on the historic setting of the Oregon NHT. Historic setting is also retained where the congressionally designated route and its multiple travel paths span the Flagstaff Hill and White Swan ACECs. Although modern development is visible from these locations of the Oregon NHT, these modifications are subordinate to the strong scenic values and are representative of their original setting. As such, the magnitude of impact on the historic and cultural setting of the Oregon NHT in these locations would also be moderate.
- Trail segment located within the Straw Ranch I and II ACECs and along Swayze Creek, would not be directly affected; however, impacts on the historic and cultural setting of the trail segments are anticipated. For this reason, the magnitude of impact of this section of the Proposed Action compared to the Timber Canyon Alternative would be moderate for these segments of Oregon NHT.

Nature and purpose and primary uses of the Oregon NHT

- The compared-to section of the Proposed Action would have more high and moderate impacts than the Timber Canyon Alternative.

Section of the Proposed Action Compared to Timber Canyon Alternative -Goodale's Cutoff Study Trail

Visual Resources

- The portion of the Goodale's Cutoff Study Trail that would be within the analysis area of the section of the Proposed Action that is equivalent to the Timber Canyon Alternative lies within the Baker Valley to Powder Valley geographic area. Within the foreground, the compared-to segment of the Timber Canyon Alternative would be predominantly skylined, with unobstructed views of the project components, and would dominate the visual setting. For these reasons, as well as the proximity of the project components to the trail segment, this section of the Proposed Action would have a high level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail.
- Within the middleground, the section of the Proposed Action that would be equivalent to the Timber Canyon Alternative would be equally backdropped against rolling hills and skylined, and the project components would be partially obstructed. The project components would attract attention and begin to dominate the visual setting. This section of the Proposed Action would

have a moderate level of contrast when viewed from this segment of the Goodale's Cutoff Study Trail.

Historic and Cultural Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified within the four general areas of the Goodale's Cutoff Study Trail. A segment of the trail that is on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during the reconnaissance level survey of the analysis area. Although this trail segment was recommended for further study during the inventory level survey, the magnitude of impact on the Goodale's/Sparta Trail would be none due to this section of the Proposed Action equivalent to the Timber Canyon Alternative.

Historic and Cultural Settings

- Modern intrusions have diminished the integrity of setting in many of the areas where trail segments are present on BLM land in the analysis area of this section of the Proposed Action,. While modern intrusions have impacted the historic setting of these trail segments, and the segments largely retain their historic and cultural setting. As such, construction of the this section of the Proposed Action that would be equivalent to the Timber Canyon Alternative would have a moderate magnitude of impact on the historic and cultural setting of the trail segments located on BLM land within the Baker Valley to Powder Valley geographic areas.

Flagstaff Alternative – Oregon Trail NHT

Visual Resources

- Near the Oregon Trail ACEC – Flagstaff Hill (Flagstaff Hill/Virtue Flat Analysis Unit), views of the project components from the Oregon NHT would be equally backdropped against terrain and skylined. The Flagstaff Alternative would be visually prominent in the landscape and create a moderate level of contrast in the foreground of the Oregon Trail NHT. There would be no impact to the portion of the Oregon NHT south of the Oregon Trail ACEC – Straw Ranch II (Burnt River Canyon Analysis Unit) in the foreground because of the Flagstaff Alternative would not be visible from the trail.
- In the middleground, because of the distance from Oregon NHT in the vicinity of the Oregon Trail ACECs (Flagstaff Hill/Virtue Flat and the Burnt River Canyon Analysis Units) combined with views of the project components predominately backdropped against the terrain, the Flagstaff Alternative would not attract attention, and the impacts to the visual resource would be negligible.

Historic and Cultural Resources

- None of the previously-recorded, trail-related cultural resources on BLM land near the Oregon Trail ACECs (Flagstaff Hill/Virtue Flat Analysis Unit) would be directly impacted by the Flagstaff Alternative. The NHOTIC, identified as a high-potential historic site (No. 106) in the NPS CMUP, is situated on top of Flagstaff Hill and overlooks the transmission line, which is sited approximately 1.2 miles to the northwest. Additionally, the NRHP-eligible

Flagstaff Hill and White Swan Segments of the Oregon NHT, and their contributing resources—the Meeker Marker and Flagstaff Hill Monument—are all located more than 0.5 mile from the centerline and would not be directly impacted by construction of the Flagstaff Alternative. However, impacts on the historic setting of the NRHP-eligible trail segments are anticipated. As such, the magnitude of impact resulting from construction of Flagstaff Alternative would be high.

- Previously recorded trail-related cultural resources include the four NRHP-eligible segments of the Oregon NHT identified in the 2013 reconnaissance level survey as Straw Ranch I and II, Swayze Creek, and Powell Creek (Tetra Tech 2013). One of these resources would have views of the Flagstaff Alternative and a moderate magnitude of change is expected from that location.

Historic and Cultural Settings

- Despite some impacts due to modern development, the four segments of the Oregon NHT near Oregon Trail ACECs (Flagstaff Hill/Virtue Flat Analysis Unit) on BLM land have retained their integrity of historic setting. The Flagstaff Alternative would intersect with the braided trail segments and congressionally designated route of the Oregon NHT in three areas, although none of these crossings occur on BLM land. The trail segments in these locations have been previously impacted by the construction of State Highway 86 and the NHOTIC on the top of Flagstaff Hill, yet several sets of trail ruts in excellent condition remain in their vicinity. For this reason, construction and operation of the Flagstaff Alternative would have a moderate magnitude of impact on the historic setting of the Oregon NHT near the Oregon Trail ACEC-Flagstaff Hill.

Number of Adverse (High and Moderate) Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be one high and three moderate impacts associated with this alignment, for a total of four adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Flagstaff Alternative– Goodale's Cutoff Study Trail

Visual Resources

- The portion of the Goodale's Cutoff Study Trail that would be within the analysis area of the Flagstaff Alternative lies within the Baker Valley to Powder River geographic area. Within the proximity of the project components to the trail segment, the Flagstaff Alternative would have a high level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail in the foreground.
- Within the middleground, the Flagstaff Alternative would be backdropped against rolling hills and skylined and would be partially obstructed. The project components would not attract

attention within the visual setting. This alternative would have a negligible level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail.

Historic and Cultural Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified within the four general areas of the Goodale's Cutoff Study Trail. A segment of the trail on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during the 2013 reconnaissance level survey of the analysis area. Although this segment was recommended for further study during the inventory level study, the magnitude of impact on the Goodale's Study Trail from the Flagstaff Alternative would be none due to its proposed location.

Historic and Cultural Settings

- Due to the expansive nature of the Goodale's Cutoff AU, much of the integrity of the broader historic setting is intact. However, in many of the areas where trail segments are present on BLM land the historic and cultural setting of these segments have been diminished by modern intrusions. The proposed Flagstaff Alternative would cross the westernmost portion of the Goodale's Cutoff Study Trail only and would not intersect with any of the braded trail segments located within it. In total, seven of the roughly 31 trail segments would fall within the 5-mile analysis area of the Flagstaff Alternative in the Baker Valley to Lower Powder Valley geographic area. Three of these trail segments would be subject to visual impacts from the Flagstaff Alternative. Modern intrusions such as State Highway 86 and agricultural and ranching development have compromised the historic setting of these trail segments. As such, the magnitude of impact from construction of the Flagstaff Alternative would be none.

Section of the Proposed Action Compared to Flagstaff Alternative– Oregon NHT

Visual Resources

- Most of the Oregon NHT near the Oregon Trail ACEC – Flagstaff Hill (Flagstaff Hill/Virtue Flat Analysis Unit), would have no or negligible views of the project components. Views from the portion of the trail near the east rim of the Ruckles Creek would be equally backdropped against terrain and skylined with the construction of the section of the Proposed Action that would be comparable to the Flagstaff Alternative. This portion of the Proposed Action would be visually dominate in the landscape and create a high level of contrast in the foreground of the Oregon Trail NHT. There would be no impact to the portion of the Oregon NHT south of the Oregon Trail ACEC – Straw Ranch II (Burnt River Canyon Analysis Unit) in the foreground because this section of the Proposed Action would not be visible from the trail.

- Similarly in the middleground, most of the Oregon NHT near the Oregon Trail ACEC – Flagstaff Hill (Flagstaff Hill/Virtue Flat Analysis Unit) would have no or negligible views of the project components. Views from the portion of the trail near the east rim of the Ruckles Creek would be predominately skylined views of the section of the Proposed Action that would be comparable to the Flagstaff Alternative. This portion of the Proposed Action would be visually prominent in the landscape and create a moderate level of contrast in the foreground of the Oregon Trail NHT.

Historic and Cultural Resources

- This section of the Proposed Action would have similar impacts to historic and cultural resource as the Flagstaff Alternative.

Historic and Cultural Settings:

- In general, the numerous braided trail segments within the Flagstaff Hill/Virtue Flat area have retained their integrity of historic setting. The section of the Proposed Action that would be comparable to the Flagstaff Alternative, as planned, would cross the congressionally designated route and trail segments on BLM land in one principal location to the southeast of the NHOTIC. This section of the Proposed Action would be located in closest proximity to the portion of the Oregon NHT, where it is sited 0.6 mile to the west. In this location near the Ruckles Creek drainage, the historic setting is retained as the surrounding sage steppe landscape remains largely the same as it did during the historic period, with the only modern intrusions to the setting occurring to the south and east. For these reasons, construction of this section of the Proposed Action in this location would have a moderate magnitude of impact on the historic setting of the Oregon NHT.
- Historic setting is also retained where the congressionally designated route and its multiple travel paths span the Flagstaff Hill and White Swan ACECs. Although modern development including the NHOTIC, is visible from all of these locations, the modifications are subordinate to the strong scenic values and are representative of their original setting. As such, the magnitude of impact on the historic and cultural setting of the Oregon NHT in these locations would be moderate
- Despite moderate impacts due to modern development and erosion, the four segments of the Oregon NHT on BLM land in the Burnt River Canyon area have retained their integrity of historic setting. The section of the Proposed Action that would be comparable to the Flagstaff Alternative, as planned, would intersect with the braided trail segments and congressionally designated route of the Oregon NHT in one area on non-BLM land. As previously discussed, the historic setting of the trail segment southeast of the community of Pleasant Valley has been impacted due to prominent modern circulation features and development associated with mining and power transmission. Similarly, modern intrusions have diminished the integrity of historic and cultural setting for the representative trail segments west of Dogtown Creek. As such, the magnitude of impact to these locations would be none by the portion of the Proposed Action that would be comparable to the Flagstaff Alternative.
- For the Oregon NHT trail traces that are located within canyons or at a low enough elevation that the transmission line would be screened from view or their setting in the

direction of this portion of the Proposed Action has not been impacted by modern intrusions. Additionally, the trail segment located within the Straw Ranch I ACEC does not show evidence of having been impacted by subsequent use or alterations. For these reasons, the magnitude of impact on the historic and cultural setting of the Oregon NHT north of I-84 and south of Virtue Flat would be moderate, and construction of the transmission line would have a high magnitude of impact near Straw Ranch I ACEC.

Nature and purpose and primary uses of the Oregon NHT

- There would be six high and eight moderate impacts associated with this alignment, for a total of 14 adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Section of the Proposed Action Compared to Flagstaff Alternative– Goodale's Study Trail

Visual Resources

- There would be no impacts from the Lower Powder Valley to Eagle Valley, Eagle Valley to Posey Valley, or Snake River near Indian Head Mountain geographic areas because this section of the Proposed Action that would be comparable to the Flagstaff Alternative is not located within the analysis area.
- The portion of the Goodale's Cutoff Study Trail that would be within the analysis area of the section of the Proposed Action that is equivalent to the Flagstaff Alternative lies within the Baker Valley to Powder Valley geographic area. Within the foreground, the Proposed Action compared-to segment of the Timber Canyon Alternative would be predominantly skylined, with unobstructed views of the project components, and would dominate the visual setting. For these reasons, as well as the proximity of the project components to the trail segment, this section of the Proposed Action would have a high level of contrast when viewed from this portion of the Goodale's Cutoff Study Trail in the foreground.
- Within the middleground, the section of the Proposed Action that would be equivalent to the Flagstaff Alternative would be predominantly skylined with unobstructed views of the project components. The project components would attract attention and begin to dominate the visual setting. This section of the Proposed Action would have a moderate level of contrast when viewed from this segment of the Goodale's Cutoff Study Trail.

Historic and Cultural Resources

- Identified historic and cultural resources are limited to the trail segments under study. A segment of the trail on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during the 2013 reconnaissance level survey of the analysis area. Although this segment was not evaluated as part of this effort, it was recommended for further study during the inventory level survey (Tetra Tech 2013:13). This trail segment, however, is not within the 5-mile analysis area of the section of the Proposed Action that would be comparable to the Flagstaff Alternative. Therefore, the magnitude of impact on the segment of the Goodale's/Sparta Trail on BLM land within the Goodale's Cutoff AU was not evaluated.

Historic and Cultural Settings

- Many of the areas where Goodale's Cutoff Study Trail segments are present on BLM land modern intrusions have diminished the integrity of historic setting. In total, approximately ten of the roughly 31 trail segments would fall within the 5-mile analysis area of the section of the Proposed Action that would be comparable to the Flagstaff Alternative. Of these trail segments, six would be subject to visual impacts from the proposed transmission line. Because the historic setting of the trail segments along Ruckles Creek and Ruckles Creek Road has been only minimally impacted by modern development, construction of this section Proposed Action in these locations would have a moderate magnitude of impact on the historic and cultural setting of these trail segments.

Burnt River Mountain Alternative – Oregon NHT

Visual Resources

- Two areas of the Oregon NHT, one to the west of Prichard Creek north of Durkee and the second, trail segment to the east of Quartz Gulch near Weatherby would experience high impacts associated with the contrast of the project components in the foreground because the Burnt River Mountain Alternative would visually dominate people's views at these locations along the trail.
- Within the middleground, people's views from the Oregon NHT would experience low to moderate impacts associated with the spatial relationship of the project components because the Burnt River Mountain Alternative would be visually subordinate to visually prominent in the landscape.

Historic and Cultural Resources

- Previously recorded trail-related cultural resources within the Burnt River Canyon are include four NRHP-eligible segments of the Oregon NHT identified in the reconnaissance level survey as Straw Ranch I and II, Swayze Creek, and Powell Creek (Tetra Tech 2013). Straw Ranch I and Swayze Creek would be subject to visual impacts from the Burnt River Mountain Alternative as they would be located only 0.5 and 1.5 miles away from the project component, respectively. No impacts were identified for the Straw Ranch II and Powell Creek segments as the transmission line would not be visible or the historic setting has already been compromised by human-made intrusions. With the exception of the Powell Creek segment, all of these trail segments would be documented during the inventory level survey of the analysis area. An additional trail segment located on BLM land has not previously been recorded and would be directly impacted by the Burnt River Mountain Alternative. This trail segment, which has not been evaluated for its NRHP eligibility, would be documented during the inventory level survey of the analysis area.

Historic and Cultural Settings

- Generally, the trail segments on BLM land within the Burnt River Canyon area have retained their scenic character and are representative of their historic setting. As planned, the Burnt River Mountain Alternative would intersect the congressionally designated route, braided trail segments, and Auto Tour Route at two locations. One crossing of the congressionally designated route is located on BLM land. In total, eight of the 13 trail locations in the inventory level survey would be subject to visual impacts from this alternative. The Burnt River Mountain Alternative would come in closest proximity to Oregon NHT segments on BLM land, which is located 0.5 mile from the project components.

- Modern intrusions including existing transmission lines, I-84 (which is both visible and audible from multiple locations) and Lookout Mountain Road, a communication tower, and the tracks of the Union Pacific Railroad have diminished the historic setting for the representative trail segments just south of Weatherby. The construction of the Burnt River Mountain Alternative would have a low magnitude of impact on the historic and cultural setting in these locations. The trail segments located within the Straw Ranch II ACEC do not show evidence of having been impacted by subsequent use or alterations. Several sets of trail ruts in excellent condition are retained in this ACEC. For these reasons, the magnitude of impact on the historic and cultural setting of the Oregon NHT by the Burnt River Canyon Alternative would generally be moderate; however, the construction of the alternative would have a high magnitude of impact on the relatively intact trail segments in the Straw Ranch II ACEC.

Number of Adverse (High and Moderate) Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be 3 high and 6 moderate impacts associated with this alignment, for a total of 9 adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Section of the Proposed Action Compared to the Burnt River Mountain Alternative – Oregon NHT

Visual Resources

- Similar to the Burnt River Mountain Alternative, the equivalent section of the Proposed Action would create moderate to high impacts associated with the contrast of the project components in the foreground because the alternative would visually dominate people's views at locations along the trail north of Durkee and near Weatherby. There would predominately be none to negligible impacts to majority of the area within this section of the Proposed Action because of the lack of visibility.

- Within the middleground, people's views from the Oregon NHT would experience low to moderate impacts associated with the spatial relationship of the project components because the section of the Proposed Action comparable to the Burnt River Mountain Alternative would be visually subordinate to visually prominent in the landscape similar to the Burnt River Mountain Alternative.

Historic and Cultural Resources

- Previously recorded trail-related cultural resources within the Burnt River Canyon area include four NRHP-eligible segments of the Oregon NHT identified in the 2013 RLS as Straw Ranch I and II, Swayze Creek, and Powell Creek (Tetra Tech 2013). These trail segments, would not be directly affected by the section of the Proposed Action that would be comparable to the Burnt River Mountain Alternative, but impacts on their historic and cultural setting are anticipated. As such, construction of this portion of the Proposed Action would have a moderate magnitude of impact on these NRHP-eligible segments of the Oregon NHT.

Historic and Cultural Setting

- Generally, the trail segments on BLM land within the Burnt River Canyon area have retained their scenic character and are representative of their historic setting. This section of the Proposed Action that would be comparable to the Burnt River Mountain Alternative, as planned, would intersect with the braided trail segments and congressionally designated route of the Oregon NHT in two areas, neither of which occur on BLM land. In total, ten trail segments in the inventory level survey would fall within the 5-mile analysis area of the sections of the Proposed Action comparable to the Burnt River Mountain Alternative. This section of the Proposed Action would intersect the Oregon NHT most closely north of Weatherby, which is located approximately 0.8 mile to the west.
- Modern intrusions including existing transmission lines, I-84 (which is both visible and audible from multiple locations) and Lookout Mountain Road, a communication tower, and the tracks of the Union Pacific Railroad have diminished the historic setting for the representative trail segments in the Burnt River Canyon area. As such, the route would have a low magnitude of impact in these locations. The Oregon NHT segments located within the Straw Ranch II ACEC do not show evidence of having been impacted by subsequent use or alterations. Several sets of trail ruts in excellent condition are retained in the vicinity of Straw Ranch II ACEC. For these reasons, the magnitude of impact on the historic and cultural setting of the Oregon NHT at five of the trail segments identified in the inventory level survey would be moderate, whereas construction of the route would have a high magnitude of impact at Straw Ranch II ACEC.

Segment 4—Brogan Area Segment

Willow Creek Alternative – Oregon NHT

Visual Resources

- The Willow Creek Alternative would create none to low impact on the Oregon NHT because the project components would not dominate the features in the landscape within the foreground or middleground of the trail and therefore, there would be no high impacts on people's views.

Historic and Cultural Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified within the Burnt River Canyon area, which is roughly from the Oregon Trail ACEC-Straw Ranch II down to the community of Huntington. The 0.25-mile-long braided segment of trail located within a canyon to the east of the Willow Creek Alternative would not be subject to visual impact by the alternative, nor would it be crossed by project components. Therefore, the magnitude of impact on the trail resulting from construction of the Willow Creek Alternative would be none.
- Historic and cultural resources between in general the communities of Huntington and Vale (Alkali Springs/Tub Mountain Analysis Unit) include three discontinuous alignments of the Oregon NHT known as the Birch Creek, Alkali Springs, and Tub Mountain segments (Tetra Tech 2013). All three of these segments are located entirely within ACECs. Additionally, the Alkali Springs segment is considered to be a high-potential route segment (No. 7) by the NPS. This segment, as defined by the NPS CMUP (NPS 1999:286), begins 6 miles north of the present-day community of Vale and extends north to a former emigrant camp site at Willow Springs. All three segments are recommended as eligible for listing in the NRHP and further documentation during the inventory level survey. Although the Willow Creek Alternative would not cross any of these Oregon NHT segments, it is anticipated that the project components would have a moderate magnitude of impact on the segments of trail in this area.

Historic and Cultural Settings

- The trail segments on BLM land roughly located in the area between the Oregon Trail ACEC-Straw Ranch II down to Huntington (Burnt River Canyon Analysis Unit), have generally retained their scenic values and remain representative of their historic setting. The proposed Willow Creek Alternative would not cross any congressionally designated or braided trail segments within Burnt River Canyon area. Of the 13 trail segment inventories within the Burnt River Canyon area, only one trail segment would fall within the 5-mile analysis area of the Willow Creek Alternative. However, because this trail segment south of Lime is located within the Burnt River Canyon it would not be subject to visual impact from the Willow Creek Alternative, and therefore the magnitude of impact on its historic and cultural setting in this area would be none.
- Generally, the trail segments on BLM land generally between the communities of Huntington and Vale (Alkali Springs/Tub Mountain Analysis Unit have outstanding scenic values and are representative of their historic setting. As planned, the Willow Creek Alternative would not intersect the congressionally designated route or braided trail segments..
- The Willow Creek Alternative comes in closest proximity to the braided segments east of Bierman Spring. However, due to topography, only the trail segments near Oregon Trail ACEC-Birch Creek would have visibility of the proposed Willow Creek Alternative. The historic setting of the trail segments near the Oregon Trail ACEC- Birch Creek have retained a high level of integrity as it has not been altered by modern intrusions. As the Willow Creek Alternative would be visible to the northwest, construction of the alternative would have a high magnitude of impact the historic and cultural setting from this location.

Number of Adverse (High and Moderate) Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be 2 high and 2 moderate impacts associated with this alignment, for a total of 4 adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Willow Creek Alternative– Goodale's Cutoff Study Trail

Visual Resources

- There would be no visual impacts associated with the Snake River near Indian Head Mountain geographic area because the Willow Creek Alternative would not be visible from the trail. There would be no impacts from the Baker Valley to Lower Powder Valley, Lower Powder Valley to Eagle Valley, or Eagle Valley to Posey Valley geographic areas because the Willow Creek Alternative is not located within the analysis area.

Historic and Cultural Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified within the four general areas of the Goodale's Cutoff Study Trail. A segment of the trail on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during Tetra Tech's reconnaissance level survey of the analysis area in 2013. Although this segment was recommended for further study during the inventory level survey, the magnitude of impact on the Goodale's/Sparta Trail would be none due to the proposed location of the Willow Creek Alternative.

Historic and Cultural Setting

- Many of the areas where Goodale's Cutoff Study Trail segments are present on BLM land modern intrusions have diminished the integrity of setting. The Willow Creek Alternative would not cross any of the braded trail segments under study. In total, two of the roughly 31 trail segments would fall within the 5-mile analysis area of the Willow Creek Alternative. Both of these trail segments are located in the Snake River near Indian Head Mountain geographical area and would potentially be subject to visual impacts from this alternative.
- Modern circulation features including Olds Ferry Road, Interstate 84, and State Highway 201 are present in this area. As the historic setting for both of these trail traces has been previously diminished by these intrusions, the magnitude of impact would be none as construction of the Willow Creek Alternative would have no impact on historic and cultural setting in these locations.

Section of the Proposed Action Compared to the Willow Creek Alternative– Oregon NHT

Visual Resources

- The Willow Creek Alternative would create none to low impact on the Oregon NHT because the project components would not dominate the features in the landscape within the foreground or middleground of the trail and therefore, there would be no high impacts on people's views.

Historic and Cultural Resources

- One cultural resource, represented by the trail trace north of Huntington, is located within the Burnt River Canyon area and within 5 miles of the section of the Proposed Action that would be comparable to the Willow Alternative. Because the NRHP eligibility of this trail trace has not yet been determined, it is not clear what, if any, impacts construction of the route would have on this cultural resource.

Historic and Cultural Settings

- Of the numerous braided segments of the Oregon NHT located on BLM land within the Burnt River Canyon area, which is roughly from the Oregon Trail ACEC-Straw Ranch II down to Huntington, only one trail alignment is located within 5 miles of the Proposed Action. Because this trail trace is located in a canyon, this portion of the Proposed Action comparable to the Willow Creek Alternative would not be visible and the magnitude of impact from its construction would be none.

Nature and purpose and primary uses of the Oregon NHT

- There would be no high or moderate impacts associated with this section of the Proposed Action, for no adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Tub Mountain South Alternative – Oregon NHT

Visual Resources

- Two of the 11 Oregon NHT segments one north of Birch Creek and the other near Willow Creek in the area between Huntington and Vale (Alkali Springs/Tub Mountain Analysis Area) would experience high impacts associated with the spatial relationship of the project components in the foreground because these components would visually dominate people's views from these platforms.
- Within the middleground, the Oregon NHT segment near Willow Creek people experience any high impacts associated with the spatial relationship of the Tub Mountain South Alternative and impacts to seven other trail segments would range from low to moderate. The remaining three Oregon NHT segments would not have views of the Tub Mountain South Alternative.

Historic and Cultural Resources

- One cultural resource, represented by the trail trace near Huntington, is located within the buffer of the Tub Mountain South Alternative. Because the NRHP eligibility of this trail trace has not yet been determined, it is not clear what, if any, impacts construction of the Tub Mountain South Alternative would have on this cultural resource.
- Historic and cultural resources in the area between Huntington and Vale (Alkali Springs/Tub Mountain Analysis Area) include three discontinuous alignments of the Oregon NHT known as the Birch Creek, Alkali Springs, and Tub Mountain segments (Tetra Tech 2013). All three of these segments are located entirely within ACECs and were assigned site numbers (B2H-MA-042, B2H-MA-10, and B2H-MA-041) during the 2013 reconnaissance level survey of the analysis area (Tetra Tech 2013). Additionally, the Alkali Springs segment is considered to be a high-potential route segment (No. 7) by the NPS as the springs for which the route is named was the only water source for emigrants travelling the 22 mile stretch of trail between the Malheur River and Birch Creek (NPS 1999:286). This segment, as defined by the NPS CMUP (NPS 1999:286), begins 6 miles north of the present-day community of Vale, Oregon and extends north to a former emigrant camp site at Willow Springs. Portions of all three segments are recommended to be eligible for listing in the NRHP. For this reason, it is anticipated that construction of the Tub Mountain South Alternative would have a moderate magnitude of impact on these trail segments.

Historic and Cultural Settings

- Of the numerous braided segments of the Oregon NHT located on BLM land in the area between Huntington and Vale (Alkali Springs/Tub Mountain Analysis Area), only one alignment which is located near Huntington, would be within the 5-mile analysis area of the Tub Mountain South Alternative. Because this trail trace is located in a canyon, the proposed transmission line would not be visible and the magnitude of impact from its construction would be none.
- Generally, the trail segments on BLM land within the Alkali Springs/Tub Mountain have outstanding scenic values and are representative of their historic setting. The Tub Mountain Alternative would not intersect the congressionally designated route or braided trail segments. With the exception of one trail segment, the transmission line is visible from all of the KOP locations within this AU.
- The historic setting of the trail segments southwest of Love Reservoir and east of Bierman Spring have retained as the landscape surrounding these locations has not been impacted by modern development. Therefore, the proposed transmission line would have a high magnitude of impact upon the historic setting of trail traces in these locations. The other Oregon NHT segments however, have been diminished by modern intrusions. As such, the magnitude of impact on historic and cultural setting in these trail segments locations would be none.

Number of Adverse (High and Moderate) Impacts on the Nature and Purpose and Primary Uses of the Oregon National Historic Trail

- There would be 3 high and 10 moderate impacts associated with this alignment, for a total of 13 adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Tub Mountain South Alternative– Goodale's Cutoff Study Trail

Visual Resources

- There would be no visual impacts associated with the Snake River near Indian Head Mountain geographic area because the Willow Creek Alternative would not be visible from the trail in the foreground. In the middleground, the Tub Mountain South Alternative would create a low level of contrast when viewed from this geographic area. There would be no impacts from the Baker Valley to Lower Powder Valley, Lower Powder Valley to Eagle Valley, or Eagle Valley to Posey Valley geographic areas because the Willow Creek Alternative is not located within the analysis area.

Historic and Cultural Resources

- No trail-related cultural resources, other than the historic alignment of the trail itself, have been identified within the four general areas of the Goodale's Cutoff Study Trail. A segment of the trail on BLM and private land, referred to as Goodale's/Sparta Trail (B2H-BA-327), was identified during Tetra Tech's RLS of the analysis area in 2013. Although this segment was recommended for further study during the ILS, the magnitude of impact on the Goodale's/Sparta Trail would be none due to the location of the Tub Mountain South Alternative.

Historic and Cultural Settings

- Many of the areas where Goodale's Cutoff Study Trail segments are present on BLM land modern intrusions have diminished the integrity of setting. The Tub Mountain South Alternative would not cross any of the braded trail segments. In total, five of the roughly 31 trail segments would fall within the 5-mile analysis area of the Tub Mountain South Alternative. All five of these segments are located in the Snake River near Indian Head Mountain area, and three would be subject to visual impacts from the alternative. As previously discussed, modern circulation features including Olds Ferry Road, I-84, and Highway 201 are present in this area, as well as agricultural and ranching development in the form of fields and buildings. These alterations have impacted the historic setting of these trail segments and, as such, the magnitude of impact on the historic setting in these locations would be none.

Section of the Proposed Action Compared to Tub Mountain South Alternative – Oregon NHT

Visual Resources

- The magnitude of impact from this section of the Proposed Action that would be comparable to the Tub Mountain South Alternative on BLM-managed segments of the Oregon NHT was not evaluated because the trail segments are not within the 5-mile analysis area of this section of the Proposed Action or would not have views of this alternative.

Historic and Cultural Resources

- One cultural resource located on BLM land roughly located in the area between the Oregon Trail ACEC-Straw Ranch II down to Huntington (Burnt River Canyon Analysis Unit), would be within 5 miles of the this section of the Proposed Action that would be comparable to the Tub Mountain South Alternative. Because the NRHP eligibility of this trail trace has not yet been determined, it is not clear what, if any, impacts construction of the route would have on this cultural resource.

Historic and Cultural Settings

- Of the numerous braided segments of the Oregon NHT located on BLM land in the area roughly located in the area between the Oregon Trail ACEC-Straw Ranch II down to Huntington (Burnt River Canyon Analysis Unit), only one alignment would be located within 5 miles of the section of the Proposed Action that would be comparable to the Tub Mountain South Alternative. Because this trail trace is located in a canyon, the Proposed Action route would not be visible and the magnitude of impact from its construction would be none.

Nature and purpose and primary uses of the Oregon NHT

- There would be no high or moderate impacts associated with this section of the Proposed Action, for no adverse impacts on the nature and purpose and primary uses of the Oregon NHT.

Section of the Proposed Action Compared to Tub Mountain South Alternative – Goodale’s Cutoff Study Trail

There would be no portions of the Goodale’s Cutoff Study Trail on BLM-administered lands in the portion of the Proposed Action that would be comparable to the Tub Mountain South Alternative.

Segment 5—Malheur Segment

There would be no portions of the Oregon NHT, Goodale’s Cutoff Study Trail, or Meek Cutoff Study Trail on BLM-administered lands in the Segment 5 of the B2H Project analysis area.

Segment 6—Treasure Valley Segment

There would be no portions of the Oregon NHT, Goodale’s Cutoff Study Trail, or Meek Cutoff Study Trail on BLM-administered lands in Segment 6 of the B2H Project analysis area.

3.2.9.9 Mitigation Planning

In consultation with appropriate land-managing agencies, mitigation measures would be developed and incorporated into the final project design to avoid, minimize, and compensate for adverse effects specific to the setting of the trails prior to the issuance of the Final EIS. This Draft EIS describes the ongoing mitigation planning work and the types of mitigation measures available to address residual impacts, but it does not quantify the mitigation that could be required once final project engineering and design is complete. Mitigation measures that could be implemented to reduce residual adverse effects to impacted NHT nature and purpose and primary uses in the B2H Project area include modification of the project and associated elements such as micrositing of towers, use of other tower types, relocation of staging areas, topographic screening and site specific re-routing of the transmission line and/or permanent access roads. For residual impacts that cannot be avoided or minimized, compensatory mitigation may be required and could include actions such as fee-purchases, easements, and restoration work. Mitigation measures could also include, but not be limited to, best management practices (BMPs) from the appendix on BMPs presented in BLM Manual 6280. These BMPs include measures to safeguard the nature and purposes of the Oregon NHT, including NHT-related resources, qualities, values, and associated settings; and the primary use or uses. Monitoring would be included as part of the project design. BMPs may include proactive trail conservation or protection project work commensurate with the level of impact to the resources, qualities, values, and associated settings; and the primary use or uses. Reduction of adverse effects to visual resources would directly benefit the landscape setting of the Oregon and Lewis and Clark NHT and the Goodale's Cutoff and Meek Cutoff Study Trails. Sections 2.2.8.4 and 2.2.10 in Chapter 2 provide more information about mitigation.

3.2.10 Air Quality and Climate Change

This section describes the existing air quality environment in the B2H Project analysis area and discusses predicted emissions of air pollutants and effects on air quality and climate change from the proposed B2H Project. The regulatory framework, scoping issues, methodology, and affected environment are presented, followed by a discussion of the environmental impacts.

3.2.10.1 Regulatory Framework

Federal

Clean Air Act

The Environmental Protection Agency (EPA) (2011) summarizes the history of the Clean Air Act of 1970 as follows:

> The legal authority for federal programs regarding air pollution control is based on the 1990 Clean Air Act Amendments (1990 CAAA). These are the latest in a series of amendments made to the Clean Air Act (CAA). This legislation modified and extended the federal legal authority provided by the earlier Clean Air Acts of 1963 and 1970.
>
> . . . The 1990 CAAA substantially increased the authority and responsibility of the federal government. New regulatory programs were authorized for the issuance of stationary source operating permits. The NESHAPs [National Emission Standards for Hazardous Air Pollutants] were incorporated into a greatly expanded program for controlling toxic air pollutants. The provisions for attainment and maintenance of NAAQS were substantially modified and expanded.

The EPA adopted ambient air quality standards in a series of rule makings that are codified in 40 CFR Part 50. The current National Ambient Air Quality Standards (NAAQS) for listed air pollutants are shown in Table 3-254.

Areas in which the NAAQS are being met are called attainment areas, while areas where the standards are not currently being met are called nonattainment areas. Separate procedures have been established for federal review of projects in attainment areas versus nonattainment areas. The proposed B2H Project and alternatives do not traverse any identified nonattainment areas in either Oregon or Idaho.

The EPA has also adopted standards to prevent the significant deterioration of air quality in attainment areas like the B2H Project area. Those regulations address stationary sources for air pollutants. None of the B2H Project construction facilities or activities are considered stationary sources, and none of the operational facilities are large enough to trigger Prevention of Significant Deterioration (PSD) or New Source Review (NSR) program requirements.

Table 3-254. National Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	National Standards Concentration
O_3	1 hour	No current standard
O_3	8 hours	0.075 parts per million, (147 micrograms per cubic meter of air) (3-year average of annual fourth-highest daily maximum)
CO	8 hours	9 parts per million (10,000 micrograms per cubic meter of air)
CO	1 hour	35 parts per million (40,000 micrograms per cubic meter of air)
NO_2	Annual average	0.053 parts per million (100 micrograms per cubic meter of air)
NO_2	1 hour	No current standard
SO_2	Annual average	No current standard
SO_2	24 hours	0.14 parts per million (365 micrograms per cubic meter of air)
SO_2	3 hours	0.5 parts per million (1,300 micrograms per cubic meter of air)
SO_2	1 hour	No current standard
PM_{10}	24 hours	150 micrograms per cubic meter of air
PM_{10}	Annual arithmetic mean	No current standard
$PM_{2.5}$	24 hours	35 micrograms per cubic meter of air (3-year average of 98th percentile)
$PM_{2.5}$	Annual arithmetic mean	15 micrograms per cubic meter of air (3-year average)
Lead	Calendar quarter	0.15 micrograms per cubic meter of air

Table Source: 40 CFR Part 50.

Table Abbreviations: O_3 = ozone; CO = carbon monoxide; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles).

Figure 3-50 identifies areas with air quality designations near the Proposed Action and Alternatives. These include federal Class 1 areas (designated wilderness areas), nonattainment and maintenance areas in Idaho and Oregon, and federal Class 1 areas and areas of concern established by federal land agencies. There are no nonattainment areas, areas of concern, or maintenance areas in the project area.

In addition to the PSD and NSR regulatory programs, the EPA administers other air quality regulatory programs. Table 3-255 summarizes the EPA regulatory programs that do and do not apply to the B2H Project.

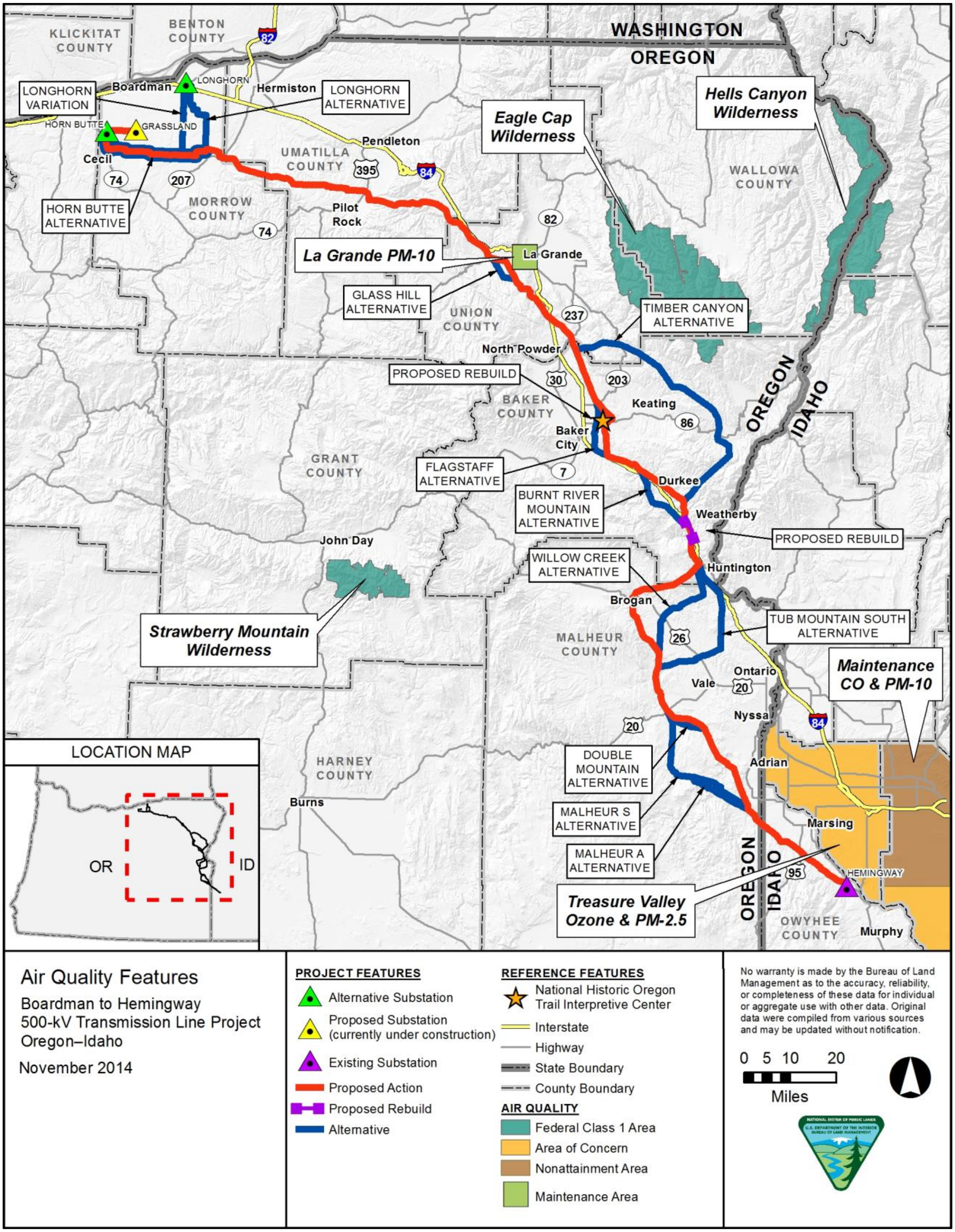


Figure 3-50. Air Quality Features

Table 3-255. Summary of Regulatory Program Applicability

Applicable General Regulatory Programs	Oregon	Idaho
New Source Performance Standards	No	No
Prevention of Significant Deterioration	No	No
New Source Performance Standards [1]	Possibly	Possibly
Title III—National Emissions Standards for Hazardous Pollutants	No	No
Title IV—Acid Rain	No	No
Title V—Part 70 Operating Permits [1]	Possibly	Possibly
General permit requirements [2]	Yes	Yes
Dispersion modeling	No	No
Impact analysis	No	No
Fugitive dust mitigation guidelines	Yes	Yes

Table Notes: [1] New Source Performance Standards and the application of Title V may be invoked by the siting and use of communication-site standby generator engines. Program applicability would be determined through consultation with the state air agencies. [2] Permits may be required for portable concrete batch plants.

New Source Performance Standards

No New Source Performance Standards applicable to construction activities on transmission lines and substations (construction or expansion) exist. However, IPC would consult with the state air quality agencies to determine whether any New Source Performance Standards apply to the communication-site standby generator engines.

Title V Operating Permits

Currently, no Title V regulations applicable to construction activities on transmission line and substation construction or expansion exist. However, IPC would consult with the state air quality agencies to determine whether Title V is applicable to the communication-site standby generator engines and potential pollutant loads associated with permanent or temporary generators.

Conformity with State Implementation Plan

Neither the proposed B2H Project nor any of the alternatives are located in any known federally designated nonattainment areas; therefore, a conformity determination is not required.

USFS Land and Resource Management Plan

The proposed B2H Project crosses approximately 6 miles of the Wallowa-Whitman National Forest. The Wallowa-Whitman *Land and Resource Management Plan* (USFS 1990) contains standards for the management of various resources. Prescribed burning standards may apply to the B2H Project if open burning of vegetation cleared from the right-of-way takes place. There is currently no firm estimate of the number of acres that would require clearing and subsequent burning. Cleared materials would likely be a combination of unspecified forestry wastes and rangeland brush and grasses. The standards require that, where appropriate, the following prescribed burning techniques be used to minimize smoke emissions and to meet emission objectives:

- Avoid burning when air stagnation advisories are in effect, during pollution episodes, or when temperature inversions exist.
- Design burning activities to use climatic conditions that favor rapid smoke dispersion.
- Burn under favorable moisture conditions, using guides developed by the Pacific Wildland Fire Sciences Laboratory.
- Accomplish mop-up quickly to reduce residual smoke.
- Design ignition method and firing technique to aid dispersion.
- Use smoke models to predict impacts, including plume trajectory.
- Use rake-type dozer blades to keep soil out of piles and windrows.
- Keep fire from spreading into decks of cull logs.

BLM Resource Management Plans

Portions of the proposed B2H Project and alternatives are located in two BLM resource management plan (RMP) areas for which the applicable RMPs identify specific air quality management objectives.

Southeastern Oregon Resource Management Plan

The Southeastern Oregon RMP identifies the following air quality objective: “Meet or exceed NAAQS and PSD regulations with all authorized actions” (BLM 2002). The RMP provides the following management actions to achieve the plan objective:

> Prior to the actual ignition of any prescribed fire, an approved prescribed fire burn plan would be in place and adhered to throughout the project. The burn plan would include information and techniques used to reduce or alter smoke emission levels. Information (including resource objectives, acres to be burned, fuel types, fuel moisture, fuel loading, fuel continuity, topography, location of population centers and Class 1 air sheds) assists fire managers in determining what weather conditions, firing methods, and mop-up standards should be used to minimize impacts. All prescribed fire projects would be completed in accordance with the “Oregon Smoke Management Plan.” The majority of fuel types in the planning area do not allow opportunities to reduce emissions; therefore, emissions will be managed by timing and atmospheric dispersal.

Baker Resource Management Plan

The Baker RMP includes the following management actions:

> Under the 1977 Clean Air Act Amendment, BLM-administered lands were given Class II air classification, which allows moderate deterioration associated with moderate population and industrial growth. The BLM will manage public lands as Class II unless they are reclassified.

Coordinate soil, water, and air concerns and activities with other resources in all phases of management actions, from the planning stage to final monitoring of the results. Review all proposed resource projects and surface disturbing activities to ensure that soils and watersheds are protected, rehabilitated, or improved.

Owyhee Resource Management Plan

The Owyhee RMP identifies the following air quality objective: "Meet or maintain the NAAQS and the PSD regulations with all authorized actions" (BLM 1999). The management actions and allocations identified to meet the objective include the following:

Limit prescribed burning in juniper/sagebrush/grassland areas to a maximum of 15,000 acres per year (or the equivalent of 100,000 tons of fuels) and average 7,500 acres of prescribed burns per year over the life of the plan. Projected emissions from individual burns will be calculated to ensure compliance with NAAQS and PSD regulations.

Limit unnecessary emissions from existing and new point and nonpoint sources by requiring and implementing standard operating procedures and stipulations for reducing or controlling emissions.

State of Oregon

Oregon air emissions are regulated by the Oregon Department of Environmental Quality (ODEQ) pursuant to the Oregon Revised Statutes, Chapter 468A, and the Oregon Administrative Rules (OARs), Divisions 200–268. Prescribed burning on forestland in Oregon would be conducted in compliance with the Oregon Smoke Management Rules (OAR 629-048-0001 through 629-048-0500).

State of Idaho

Idaho air emissions are regulated by the Idaho Department of Environmental Quality, Air Quality Division. Chapter 58.01.01 of the Idaho Administrative Procedures Act presents the applicable regulations for criteria pollutants and fugitive-dust control.

Idaho and Oregon have established ambient air quality standards for their respective states. Table 3-256 presents Idaho's and Oregon's criteria-pollutant standards for protecting human health (primary standards) and public welfare (secondary standards).

Permitting Requirements (Construction and Operations)

State of Oregon

Pursuant to OAR 340-216-0056, portable concrete batch plants, used during the construction phase, would be required to obtain stationary-source location and operations permits. Concrete batch plants are generally classified as "minor sources" under OAR 340-216-0020. In addition, IPC would consult with the ODEQ regarding the need for operations permits for the small communication-site standby generator engines.

State of Idaho

Sections 220 through 222 of Chapter 58.01.01 of the Idaho Administrative Procedures Act provide for permit exemptions. According to Section 220, "fugitive emissions shall not be considered in determining whether a source meets the applicable exemption criteria unless required by federal law." The proposed portable concrete batch plants would likely meet the requirements for permit exemption, given that fugitive emissions would be the predominant emissions from such plants. In addition, IPC would consult with the Idaho Department of Environmental Quality regarding the need for operational permits for the small communication-site standby generator engines.

Table 3-256. Oregon and Idaho State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Idaho Standards Concentration	Oregon Standards Concentration
O_3	1 hour	N/A	N/A
O_3	8 hours	0.075 part per million (147 micrograms per cubic meter) (3-year average of annual fourth-highest daily maximum)	0.075 part per million (147 micrograms per cubic meter) (3-year average of annual fourth-highest daily maximum)
CO	8 hours	9 parts per million	9 parts per million (10,000 micrograms per cubic meter)
CO	1 hour	35 parts per million	35 parts per million (40,000 micrograms per cubic meter)
NO_2	Annual average	0.053 part per million	0.053 part per million (100 micrograms per cubic meter)
NO_2	1 hour	100 part per billion	N/A
SO_2	Annual average	80 micrograms per cubic meter	0.02 part per million as an annual arithmetic mean for any calendar year at any site (80 micrograms per cubic meter)
SO_2	24 hours	365 micrograms per cubic meter	0.10 part per million as a 24-hour average concentration more than once per calendar year at any site (365 micrograms per cubic meter)
SO_2	3 hours	0.5 part per million	0.5 part per million as a three-hour average concentration more than once per year at any site
SO_2	1 hour	75 part per billion	N/A
PM_{10}	24 hours	150 micrograms per cubic meter	150 micrograms per cubic meter
PM_{10}	Annual arithmetic mean	N/A	N/A
$PM_{2.5}$	24 hours	35 micrograms per cubic meter (3-year average of 98th percentile)	35 micrograms per cubic meter (3-year average of 98th percentile)
$PM_{2.5}$	Annual arithmetic mean	15 micrograms per cubic meter (3-year average)	15 micrograms per cubic meter (3-year average)
Lead	Calendar Quarter	0.15 micrograms per cubic meter	0.15 micrograms per cubic meter as a maximum arithmetic mean averaged over a calendar quarter

Criteria Pollutant	Averaging Time	Idaho Standards Concentration	Oregon Standards Concentration
Particle Fallout	1 Month	N/A	10 grams per square meter in an industrial area 5.0 grams per square meter in an industrial area if visual observations show a presence of wood waste or soot and the volatile fraction of the sample exceeds 70 percent 5.0 grams per square meter in residential and commercial areas 3.5 grams per square meter in residential and commercial areas if visual observations show the presence of wood waste or soot and the volatile fraction of the sample exceeds 70 percent

Table Source: Oregon Revised Statutes, Chapter 468A; Oregon Administrative Rules, Divisions 200–268; Idaho Administrative Procedures Act, Chapter 58.01.01.

Table Abbreviations: O_3 = ozone; CO = carbon monoxide; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); N/A = not applicable.

FUGITIVE-DUST CONTROL

Sources, including construction projects, operating within Oregon and Idaho are required to control fugitive dust (i.e., airborne particulate matter). The following are fugitive-dust regulations and control measures that apply to the B2H Project.

STATE OF OREGON

OAR Sections 340-200 through 340-268 do not provide specific rules for fugitive-dust control. Section 340-200-0020 defines *fugitive emissions* as follows:

> (a) Except as used in subsection (b) of this section, [fugitive emissions] means emissions of any air contaminant which escape to the atmosphere from any point or area that is not identifiable as a stack, vent, duct, or equivalent opening
>
> (b) As used to define a major Oregon Title V Operating Permit program source, [fugitive emissions] means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

STATE OF IDAHO

The Idaho Administrative Procedures Act contains specifics regulations for controlling fugitive dust and preventing particulate matter emissions, as excerpted below (Section 58.01.01, Rules 650 and 651):

> **650. RULES FOR CONTROL OF FUGITIVE DUST.**
> The purpose of Sections 650 through 651 is to require that all reasonable precautions be taken to prevent the generation of fugitive dust. (5-1-94)
>
> **651. GENERAL RULES.**
> All reasonable precautions shall be taken to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the

proximity of dust emitting operations to human habitations and/or activities, the proximity to mandatory Class I Federal Areas and atmospheric conditions which might affect the movement of particulate matter. Some of the reasonable precautions may include, but are not limited to, the following: (3-30-07)

01. Use of Water or Chemicals. Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land. (5-1-94)

02. Application of Dust Suppressants. Application, where practical, of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust. (5-1-94)

03. Use of Control Equipment. Installation and use, where practical, of hoods, fans and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations. (5-1-94)

04. Covering of Trucks. Covering, when practical, open bodied trucks transporting materials likely to give rise to airborne dusts. (5-1-94)

05. Paving. Paving of roadways and their maintenance in a clean condition, where practical. (5-1-94)

06. Removal of Materials. Prompt removal of earth or other stored material from streets, where practical. (5-1-94)

Outdoor Burning

ODEQ regulations prohibit certain types of burning in selected areas of the state. Outside the Willamette Valley, in cities with populations larger than 4,000 people, Oregon’s air quality rules prohibit open burning of commercial, construction, demolition, and land-clearing debris within 3 miles of the city limits. Under rare circumstances, when no other means of disposal are available or when other means are severely restricted, ODEQ may issue a permit, known as an Open Burning Letter Permit, to allow the burning of these kinds of waste in the restricted areas. IPC would consult with the state air quality agencies to determine whether an Open Burning Letter Permit would be required for the B2H Project.

State Clean-Air Plans

The proposed B2H Project and alternatives do not traverse any nonattainment or air quality maintenance areas in either state. Therefore, no state clean-air plans would apply.

3.2.10.2 Issues Identified for Analysis

The following list summarizes air quality issues that were raised during scoping, as well as issues that must be considered as stipulated by laws or regulations. For a complete list of scoping issues, see the B2H Project *Revised Scoping Report* (BLM 2011a).

- Will the project be inconsistent with county, state, and federal air quality plans?
- Will emissions of air pollutants exceed what is allowable by state and federal law?
- Will the project cause any adverse impacts on air quality in wilderness areas?
- How much dust will be generated by construction activities? How will it be managed?

3.2.10.3 METHODOLOGY

Appendix B.9 details the methods used to estimate emissions from the construction and operation phases of the proposed B2H Project and alternatives. These methods represent currently accepted techniques for deriving emissions estimates from construction and operational activities. Emission Factors 2007 (EMFAC 2007), Version 2.30 (California Air Resources Board 2006), was used to generate a set of composite factors for the statewide area of California. It was assumed that the overall vehicle mix in California is similar to the vehicle mix in Oregon and Idaho. The EMFAC run was generated for a vehicle mix covering 1969–2013. The composite factors generated were then applied to worker travel data for 2013–2015.

The analysis considered the following:

- Construction disturbance areas within the Proposed Action and alternatives (e.g., access road construction and use during the construction phase, tower construction areas, and substation construction areas)
- Construction equipment exhaust emissions
- Use of portable concrete batch plants during the construction phase
- Vehicle exhaust emissions associated with construction worker travel and construction supply delivery along the routes
- Use of unpaved access and service roads during the operations phase
- Vehicle emissions used for inspection and maintenance during the operations phase
- Minor stationary-source emissions applicable to operations activities

The analysis area for air quality encompasses the geographic areas defined by applicable state air quality plans, federal conformity thresholds, and local requirements within the geographic areas of the Proposed Action and Alternatives. The analysis area used for quantifying emission impacts includes the construction corridor and substation sites along with emissions sources such vehicles traveling on public roads and construction-site access roads and helicopters used during construction.

The majority of the emissions related to the B2H Project would occur within the construction corridor and at the substation sites. Most impacts from project-related emissions would likely be confined to the proximity of the construction corridor or substation/communication-site property lines.

3.2.10.4 Affected Environment

Air Quality

A review of published annual air quality monitoring reports indicates that existing air quality in each state is generally good to excellent. In Oregon, the closest Class I area to the B2H Project is the Eagle Cap area, which lies approximately 25 miles northeast of the Proposed Action in Wallowa County. In Idaho, the closest Class I area to the Proposed Action is the Sawtooth area, which lies more than 55 miles to the east. Because Class I areas are distant from the Proposed Action and Alternatives, no adverse air quality effects on Class I areas are anticipated as a result of project construction or operation.

Figure 3-50 shows the current locations of the Idaho and Oregon nonattainment areas for particulate matter less than 10 microns (PM_{10}), as well as other areas of air quality concern. Idaho is in attainment, with the exception of two PM_{10} nonattainment areas in the southeast corner of the state and the north Ada County carbon monoxide and PM_{10} maintenance area. Oregon has a small PM_{10} nonattainment area in the La Grande area.

Preliminary inventories of emissions from greenhouse gases (GHGs)—primarily carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—have been prepared for each state through a cooperative effort with the Center for Climate Strategies, ODEQ, or both. These inventories do not include reporting from all identified sectors and, therefore, most likely do not represent a complete analysis of GHG emissions for each state. Table 3-257 presents the total GHG emissions for Idaho and Oregon from 2000 to 2011. The total emissions are presented in million metric tons of carbon dioxide (CO_2) equivalent.

Table 3-257. Total Greenhouse Gas Emissions by State

State	Year	Total GHG Emissions ($MtCO_2e$)
Idaho	2000	26.4
Idaho	2001	26.7
Idaho	2002	26.2
Idaho	2003	25.8
Idaho	2004	27.0
Idaho	2005	27.6
Idaho	2006	28.4
Idaho	2007	28.7
Idaho	2008	27.7
Idaho	2009	27.0
Idaho	2010	27.9
Idaho	2011	27.8
Oregon	2000	60.8
Oregon	2001	59.8

State	Year	Total GHG Emissions ($MtCO_2e$)
Oregon	2002	58.6
Oregon	2003	59.2
Oregon	2004	60.5
Oregon	2005	60.8
Oregon	2006	60.2
Oregon	2007	57.0
Oregon	2008	55.5
Oregon	2009	53.3
Oregon	2010	52.9
Oregon	2011	49.2

Table Source: World Resources Institute 2014.

Table Abbreviations: $MtCO_2e$ = million metric tons of carbon dioxide equivalent (CO_2e).

CLIMATE

STATE OF OREGON

Oregon has a mild, though varied, climate; violent weather events are rare but are severe enough to cause serious widespread damage. Oregon is divided into six major agroclimatic areas, with the Proposed Action and Alternatives lying predominantly in the Columbia and Snake River Basins. The climate in these basins is best characterized as a continental climate. The climate has maritime influences in winter, particularly west of the Blue Mountains, and monsoonal influences in the summer, particularly south of the Blue Mountains and the western Snake River Plain. In the Columbia River Basin and the Blue Mountains, annual precipication totals are about 15 to 20 inches; however, some of the mountain regions receive as much as 35 inches per year (Western Regional Climate Center 2011a).

STATE OF IDAHO

Sizable areas in the Boise River Basin receive an average of 40 to 50 inches of precipitation per year, with a few points or small areas receiving more than 60 inches. Large areas, including the northeastern valleys, much of the upper Snake River Plain, Central Plains, and the lower elevations of the southwestern valleys receive less than 10 inches annually. The major mountain ranges of the state accumulate a deep snow cover during winter months, and the release of water from the melting snowpack in late spring furnishes irrigation water for more than 2 million acres, mainly within the Snake River Basin above Weiser, Idaho (Western Regional Climate Center 2011b).

CLIMATE CHANGE

Ongoing scientific research has identified the potential impacts on global climate of anthropogenic (human-made) GHG emissions and changes in biological carbon sequestration (natural storage of carbon in soils, plants, and marine life) due to land management activities. Several activities contribute to climate change, including emissions of GHGs (especially CO_2 and methane) from fossil fuel development, activities using combustion engines, changes to the natural carbon cycle, and changes in albedo (amount of solar energy reflected by the earth's surface).

In 2001, the Intergovernmental Panel on Climate Change estimated that by the year 2100, global average surface temperatures would increase by 2.5 to 10.4 degrees Fahrenheit above 1990 levels. The National Academy of Sciences has confirmed these findings but also has indicated uncertainties regarding how climate change may affect different regions. Computerized models predict that increases in temperature would not be distributed equally but would likely be accentuated at higher latitudes. Warming during the winter is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. While increases in temperatures would increase water vapor in the atmosphere and enhance heavy storm events, they would also reduce soil moisture and increase generalized drought conditions. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict (Intergovernmental Panel on Climate Change 2001; National Academy of Sciences 2001; US Global Change Research Program 2009).

Forests, woodlands, and rangelands store carbon, which affects atmospheric concentrations of CO_2 and thereby affects global climate. Vegetation management can provide either a source of CO_2 or a sink of CO_2 through vegetation growth. In the United States, forests have acted as a carbon sink throughout the last century (Birdsey et al. 2006). Forests and harvested wood in the United States currently represent a carbon pool of 43.9 billion metric tons (EPA 2007). In addition, forest management currently represents an annual accumulation of 191 million metric tons of carbon, which represents an offset of approximately 11 percent of total carbon emissions in the United States (EPA 2007). Globally, the combination of vegetation, soil, and detritus currently store 2.3 trillion metric tons of carbon (Denman et al. 2007:515). Furthermore, atmospheric carbon in the form of CO_2 is increasing at a rate of 3.2 to 4.1 billion metric tons of carbon per year (Denman et al. 2007:512).

Because there is incomplete and unavailable information on both the current inventory of carbon storage and the effect of management on carbon storage (as described below), it is not possible to describe the total storage of carbon in forests, rangelands, and wood harvested from the Decision Area with precision and accuracy (BLM 2011b:3-5).

Current scientific assessments of future climate change are more global and regional in scale. As a result, there are no precise scientific assessments regarding either the impact future climate change or projections for specific localized. Estimating quantitative changes in the local environment is not feasible at this time, although several scientific organizations are working on downscaling models that should be useful in the near future. With this in mind, it is still reasonable to assume that over the next 20 years the region will experience some noticeable changes attributable to factors related to climate change. Changes in stream systems, including their flow, temperature, and turbidity, should be substantial enough to influence irrigation activities, flood control, and water related recreational activities. Spring runoff is expected to come earlier and more quickly with lower stream flows later in the season. Stream temperatures are expected to rise enough to reduce cold-water fisheries habitat. Furthermore, both the timing and length of seasons should be affected. This, in turn, would influence changes in the ranges, phenology, community composition, biotic interactions, and behavior of both plants and animals. Climate change predictions include an increase in duration and frequency of drought conditions and, conversely, increased precipitation events. This combination can result in an increase in soil erosion and stream sedimentation and can alter stream channels (Climate Impacts Group 2010; Intergovernmental Panel on Climate Change 2007; BLM 2011b:3-3).

The 2010 Oregon Climate Assessment Report states the following: “Some model simulations of future vegetation changes in Oregon indicate that high elevation areas of subalpine forest and alpine tundra as well as areas of shrubland in eastern Oregon will contract under projected future climate changes. These projected vegetation changes would reduce critical habitat for species of management concern, such as greater sage-grouse (*Centrocercus urophasianus*)” (Oregon Climate Change Research Institute 2010).

3.2.10.5 Environmental Consequences

This section discusses potential effects of the Proposed Action and alternatives on air quality and climate change. Air quality and climate change effects may be generated from the following activities:

- Construction of access roads
- Construction of the transmission towers and pad sites
- Construction of substations and communication sites
- Activities involved with the ongoing use and maintenance of the transmission line, substations, and right-of-way and decommissioning

Effects of the Proposed Action and alterntives are described project-wide because the intensity and duration of air quality and climate change effects would be substantially the same for the Proposed Action and all the alternatives.

No Action Alternative

The No Action Alternative would result in the continuation of current air quality conditions and would avoid any effects on climate change through direct effects of GHG emissions or the indirect effects of reductions in carbon storage capacity.

Design Features

In addition to compliance with all applicable federal, state, and local air quality regulations, Appendix C includes design features and construction and operation standards to reduce effects on air quality and climate that would be conditions of any project authorizations including the following:

- AIR-1—Minimize idling time for diesel equipment whenever possible.

- AIR-2—Ensure that diesel-powered construction equipment is properly tuned and maintained and shut off when not in direct use.
- AIR-3—Prohibit engine tampering to increase horsepower.
- AIR-4—Reduce construction-related trips as feasible for workers and equipment, including trucks.
- AIR-5—Project-related vehicles and construction equipment would be required to use low sulfur diesel fuel as soon as it is commercially available.
- AIR-6—All requirements of those entities having jurisdiction over air quality matters would be adhered to. Any necessary dust control plans would be developed and permits for construction activities would be obtained. Open burning of construction trash would not be allowed, unless permitted by appropriate authorities.

RESIDUAL EFFECTS

PROPOSED ACTION

Construction

Air Quality

Construction activities for the proposed B2H Project would take place in the following sequence: site preparation/trenching, foundation work, installation of structures and conductors, and right-of-way/site restoration. Anticipated construction periods for the various components of the proposed B2H Project are further described in Appendix B.9. Appendix B.9 describes the methodologies used to quantify the estimated emissions from the identified construction and operations activities for the Proposed Action.

Construction activities that would generate emissions include land clearing, ground excavation, and cut and fill operations. These construction activities would occur 6 days per week for up to 10 to 12 hours per day during the construction period. The intermittent and short-term emissions generated by these activities would include dust from soil disruption and combustion emissions from the construction equipment. Emissions associated with construction equipment include PM_{10}, $PM_{2.5}$ (particulate matter less than 2.5 microns), nitrogen oxides, carbon monoxide, volatile organic compounds, sulfur oxides, and small amounts of air toxic pollutants. These emissions could result in low, short-term impacts on air quality in the immediate vicinity of project construction. Table 3-258 lists the estimated emissions of these criteria pollutants that would be generated by the construction of proposed project facilities in each county.

Table 3-258. Estimated Emissions of Criteria Pollutants from Construction

Portion of Route and County	Approximate Length (miles)	PM_{10} (tons) [1]	$PM_{2.5}$ (tons) [1]	NOx (tons)	CO (tons)	SOx (tons)	VOCs (tons)
Morrow County	45.8	80.8	59.5	70.9	529.6	0.7	74.3
Umatilla County	49.5	87.3	64.4	76.6	572.4	0.8	80.3
Union County	39.4	69.5	51.2	61.0	455.6	0.6	63.9
Baker County	74.4	131.3	96.7	115.1	860.3	1.2	120.7
Malheur County	72.1	127.2	93.7	111.5	833.7	1.2	116.9

Portion of Route and County	Approximate Length (miles)	PM_{10} (tons) [1]	$PM_{2.5}$ (tons) [1]	NOx (tons)	CO (tons)	SOx (tons)	VOCs (tons)
Owyhee County	23.8	42.0	30.9	36.8	275.2	0.4	38.6
Total Emissions in Oregon		496.1	365.5	435.1	3,251.6	4.5	456.1
Total Emissions in Idaho		42.0	30.9	36.8	275.2	0.4	38.6
Total B2H Project Emissions [1]		538.1	396.4	471.9	3,526.8	4.9	494.7

Table Abbreviations: PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); NOx = nitrogen oxides; CO = carbon monoxide; SOx = sulfur oxides; VOCs = volatile organic compounds.

Table Note: [1] Totals may not match other tables due to mileage multiplication and rounding.

Refer to Appendix B.9 for the methodologies used to quantify the estimated emissions.

Transmission line and construction data supplied by IPC indicate that approximately 8 percent of the Proposed Actionis located in Idaho, with the remaining 92 percent of the Proposed Action in Oregon. Table 3-259 shows the approximate total anticipated emissions for construction of the B2H Project by state. Table 3-260 presents the construction emissions on a normalized yearly basis. Table 3-261 presents the construction emissions breakdown (from Table 3-260) on a per-mile basis.

Table 3-259. Construction Emissions Breakdown by State

Pollutant	Oregon Emissions (tons per construction period)	Idaho Emissions (tons per construction period)
NO_2	434.7	37.1
CO	3,249.1	277.5
VOCs	455.8	38.9
SOx	4.5	0.4
PM_{10}	495.8	42.3
$PM_{2.5}$	365.4	31.2
CO_2e	49,376.0	4,294.0

Table Abbreviations: NO_2 = nitrogen dioxide; CO = carbon monoxide; VOCs = volatile organic compounds; SOx = sulfur oxides; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); CO_2e = carbon dioxide equivalent.

Refer to Appendix B.9 for the methodologies used to quantify the estimated emissions.

Table 3-260. Annualized Construction Emissions Breakdown by State

Pollutant	Oregon Emissions (tons per year)	Idaho Emissions (tons per year)
NOx	193.2	16.5
CO	1,444.1	123.3
VOCs	202.6	17.3
SOx	2.0	0.2
PM_{10}	220.4	18.8
$PM_{2.5}$	162.4	13.9

Pollutant	Oregon Emissions (tons per year)	Idaho Emissions (tons per year)
CO_2e	21,945.0	1,908.0

Table Abbreviations: NOx = nitrogen oxides; CO = carbon monoxide; VOCs = volatile organic compounds; SOx = sulfur oxides; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); CO_2e = carbon dioxide equivalent.

Table Note: Refer to Appendix B.9 for the methodologies used to quantify the estimated emissions.

Construction equipment would be operated as needed during daylight hours only, and the emissions from gasoline and diesel engines would be minimized by engine compliance with mobile-source exhaust standards established by the EPA. Therefore, emissions from the construction of the transmission line, substations, and communication facilities are not expected to cause or contribute to: a violation of an applicable ambient air quality standard or contribute substantially to an existing or projected air quality violation. Most of the construction equipment would be powered by diesel engines that would meet current EPA emissions standards based on engine size and the date of the manufacture. In addition, B2H Project-related vehicles and construction equipment would be required to use low-sulfur diesel fuel as soon as it is commercially available.

Table 3-261. Construction Emissions per Mile

Pollutant	Average Emissions (tons per mile per period) [1]
NOx	1.62
CO	11.56
VOCs	1.62
SOx	0.016
PM_{10}	1.76
$PM_{2.5}$	1.30
CO_2e	174.1

Table Abbreviations: NOx = nitrogen oxides; CO = carbon monoxide; VOCs = volatile organic compounds; SOx = sulfur oxides; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); CO_2e = carbon dioxide equivalent.

Table Note: [1] Assumes route mileage is about 305 miles, with about 281.2 miles in Oregon and about 23.8 miles in Idaho.

Refer to Appendix B.9 for the methodologies used to quantify the estimated emissions.

The anticipated construction activities are generally not required to have stationary- or indirect-source permits by either of the affected states and are exempt from the major regulatory programs such as NSR, PSD, NESHAPs, Title IV, Title V. Construction activities must, however, comply with applicable state requirements for fugitive-dust control. Temporary operations permits may also be required for the portable concrete batch plants.

Fugitive-dust emissions would depend on the moisture content and texture of the soils that would be disturbed. The construction emissions would vary from day to day depending on the level of activity, specific operations, and prevailing weather. Appendix B.9 presents the support data and methodologies used to estimate fugitive-dust emissions from the construction phase. Fugitive-dust emissions tend to stay localized and settle to the ground quickly. Fugitive-dust emissions would be short-term and low intensity.

Electrical power needs within the construction corridor would be met through the use of portable electrical generators. These generators are typically diesel powered and would be located at the various construction sites according to need. Emissions from portable generators are included in the construction equipment exhaust estimates presented in Appendix B.9.

Table 3-262 compares annualized construction emissions to the statewide emissions inventory values. The construction emissions are for the emissions in the five counties in Oregon and one county in Idaho. This comparison indicates that construction emissions of criteria pollutants represent small (less than one-half percent) temporary additions to the statewide point- and area-source inventories.

Table 3-262. Comparison of Project Construction Emissions

Pollutant	2002 State Totals (tons/year) [1]	2018 State Totals (tons/year) [1]	Estimated Project Construction (tons/year)	Project % of 2002 State Totals	Project % of 2018 State Totals
NO_2	81,679	104,802	209.7	0.26	0.20
CO	446,701	513,170	1,567.4	0.35	0.31
VOCs	405,705	573,485	219.9	0.054	0.038
SO_2	48,032	43,643	2.2	0.0046	0.0050
PM_{10}	239,981	304,057	239.2	0.10	0.079

Table Abbreviations: NO_2 = nitrogen dioxide; CO = carbon monoxide; VOCs = volatile organic compounds; SOx = sulfur oxides; PM_{10} = particulate matter less than 10 microns (coarse particles).

Table Note: [1] State totals do not include mobile source emissions.

Refer to Appendix B.9, Table B.9-13 for the methodologies used to quantify the estimated emissions.

Open Burning of Right-of-Way Vegetation

Open burning of vegetation cleared from the right-of-way during construction may take place, although there is currently no firm estimate of the number of acres that would require clearing and subsequent burning. Cleared materials would likely be a combination of unspecified forestry wastes and rangeland brush and grasses. Section 2.5 of EPA Publication AP-42, *Compilation of Air Pollution Emissions Factors* (EPA 1992), presents data on waste generation rates and emissions factors for open burning of these types wastes. Based on preliminary data, it is estimated that approximately 681 acres of unspecified forest residue may be cleared and burned. These data are used to estimate emissions from open burning activities until a definitive estimate of waste generation rates is developed prior to issuance of the right-of-way. These emissions are included in the project construction emissions tables above.

Climate Change

Greenhouse-Gas Emissions

GHG emissions from construction (primarily CO_2, methane, and nitrous oxide) come primarily from fuel combustion sources. Data for the GHG analysis was derived from the California Climate Action Registry General Reporting Protocol, Version 3.1 (California Climate Action Registry 2009a), and Power Generation/Electric Utility Reporting Protocol, Version 1.1 (California Climate Action Registry 2009b). Appendix B.9 presents the emissions calculations, methodologies, and support data for the GHG emissions. The direct effects of construction on GHG emissions are estimated to be 53,086 tons over the 3-year construction period. Approximately 8 percent of these emissions, or 4,294 tons of CO_2 equivalent, are allocated to Idaho, and 92 percent of these emissions, or 49,376 tons of CO_2 equivalent, are allocated to Oregon. On an annual basis, the estimated B2H Project construction GHG emissions for Oregon and Idaho are 21,945 and 1,908 tons per year, respectively. By comparison the annual emissions would constitute less than 0.04 percent of annual GHG emissions for Oregon and 0.005 percent for Idaho. This does not represent a substantial contribution to annual GHG emissions for Oregon and Idaho.

The Council on Environmental Quality's (CEQ's) February 18, 2010, memorandum for heads of federal departments and agencies suggests that "the reference point of 25,000 metric tons of direct CO_2-equivalent GHG emissions [per year] may provide agencies with a useful indicator, rather than an absolute standard, of insignificant effects" (CEQ 2010:3). Table 3-257 shows GHG emissions inventories for Oregon and Idaho. Considering the inventory totals for the construction-period emissions of CO_2 equivalent allocated to each state and the CEQ guidance, the direct effects of GHG emissions from construction of the Proposed Action or alternatives would represent low and short-term contributions to the state annual totals of CO_2 equivalent.

Carbon Storage

The BLM Baker Draft RMP states, "The net storage or loss of carbon on rangelands and grasslands in the Planning Area is generally small and difficult to measure. Soils on these sites also contain relatively little organic matter compared to forest soils (Ryan et al. 2008). Although forests and woodlands make up only 20 percent of the total acres on public lands in the Planning Area, these vegetation communities sequester and store approximately 72 percent of the carbon [in the Planning Area]" (BLM 2011b:3-5). The Planning Area for the BLM Baker Draft RMP includes all of the forested areas within the B2H Project analysis area for the Proposed Action and alternatives. The Draft RMP also provides estimates of the tons of carbon stored above-ground in live and dead vegetation for different types of plant communities as follows (BLM 2011b: 3-5, Table 3-1):

- Sagebrush steppe: 1.35 tons per acre
- Mixed grasslands: 0.25 tons per acre
- Mixed grasslands and juniper: 3 tons per acre
- Nonnative annual grass: 0.31 tons per acre
- Nonnative seeded grass: 0.22 tons per acre
- Dry forest: 10 tons per acre
- Moist forest: 64 tons per acre
- Riparian: 2 tons per acre

The Proposed Action and Alternatives anticipates construction disturbance to approximately 3,806 acres of shrublands and grasslands and 454 acres of combined forest vegetation. Assuming the highest estimated carbon storage capacity for the two main vegetation types, and assuming all disturbed areas remain disturbed for the duration of construction, construction of the Proposed Action or an alternative would be short-term and have an indirect effect of reducing vegetative carbon storage capacity of shrublands/grasslands by approximately 11,500 tons, and forested areas by approximately 29,000 tons. In the context of available carbon storage in the analysis area and the short-term nature of the disturbance, the indirect construction effects of reduced carbon storage capacity would be low.

Operations

Air Quality

Operations-related emissions would be from the following types of sources and activities:

- Use of motor vehicles to transport inspection and maintenance personnel to the transmission line and associated facilities as required
- Travel on the unpaved access and service roads during the inspection- and maintenance-related activities
- Minor emissions from the use of small stationary engines for emergency power at the proposed communication sites

Appendix B.9 presents the emissions estimation methodologies and support data for the operations phase. The following are estimated annual emissions from inspection and maintenance activities during the operations phase:

- Volatile organic compounds: 0.06 ton per year

- Carbon monoxide: 0.40 ton per year
- Nitrogen oxides: 0.65 ton per year
- Sulfur oxides: 0.0005 ton per year
- PM_{10}: 0.64 ton per year
- $PM_{2.5}$: 0.14 ton per year
- CO_2 equivalent: 63 tons per year

Emissions for the proposed B2H Project operations phase are broken down for each state based on the above-mentioned estimated values and are shown in Table 3-263.

Climate Change

Greenhouse-Gas Emissions

GHG emissions from operations activities are anticipated to be approximately 63 tons of CO_2 equivalent per year. See the GHG calculation methods presented in Appendix B.9, Table B.9-15.

Carbon Storage

The Project estimates operations disturbance to approximately 411 acres of shrublands and grasslands and 41 acres of combined forest vegetation. Assuming the highest estimated carbon storage capacity for the two main vegetation types, and assuming all disturbed areas remain disturbed for the duration of construction, construction of the proposed Project would result in the indirect effect of reducing vegetative carbon storage capacity in of shrublands/grasslands by approximately 1,200 tons, and forested areas by approximately 2,600 tons for the long-term of project operations. In the context of available carbon storage in the analysis area, the proposed B2H Project operations indirect effects of reduced carbon storage capacity would be low.

Corona Discharges

In energized transmission lines, electric fields around a conductor can become concentrated enough to create an electric discharge. This type of discharge, known as a *corona*, ionizes the air around the conductor. The voltage at which the conductor is energized, the conductor shape and diameter, as well as any scratches, dust, and water that have accumulated on the conductor can affect its electrical performance and cause the creation of coronas. Corona forming on the transmission line is a natural phenomenon, and is recognized as a buzzing sound in the vicinity and an energy loss when the line is energized. Ionization of the air can produce gaseous emissions, typically being highest during periods of rain and fog.

A corona on an electrical conductor can produce small amounts of ozone, which constitutes most of what this process generates, along with some nitrogren oxide emissions. Corona levels on the proposed 500-kV line are expected to be very low. The current national standard for ozone emissions is 75 parts per billion over an 8-hour averaging time. The maximum increase in ozone levels at the ground produced by corona activity on the proposed transmission line would be on the order of 1 part per billion or less.

Table 3-263. Operations Emissions Breakdown by State

Pollutant	Oregon Emissions (tons per year)	Idaho Emissions (tons per year)
NOx	0.60	0.05
CO	0.37	0.03
VOCs	0.055	0.005
SOx	0.00046	0.00004
PM_{10}	0.59	0.046
$PM_{2.5}$	0.125	0.011
CO_2e	58.0	5.0

Table Abbreviations: NOx = nitrogen oxides; CO = carbon monoxide; VOCs = volatile organic compounds; SOx = sulfur oxides; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); CO_2e = carbon dioxide equivalent.

ALTERNATIVES

Air Quality

Table 3-264 presents construction emissions increases and decreases anticipated for each of the alternatives as compared with the Proposed Action. To facilitate this comparison, the construction emissions anticipated for each of the alternatives are compared to the portion of the Proposed Action.. The first section of the table lists the emissions expected for the Proposed Action in its entirety. The next section shows the emissions anticipated for each alternative in comparison to the Proposed Action, and the net difference in anticipated emissions between the two. The main variable is the relative length of each alternative compared to the Proposed Action. The methods for calculating emissions are discussed in Appendix B.9. Project operations emissions for the alternatives would be approximately four orders of magnitude less than construction emissions (approximately one ten-thousandth) and would therefore be low.

Climate Change

Greenhouse-Gas Emissions

GHG emissions for the construction and operations for the alternatives are similar to those for the Proposed Action, with minor variations in amounts based primarily on the relative length of the line.. The maximum variation would be the Longhorn Alternative, which would produce approximately 2,600 fewer tons of GHG during construction than would the Proposed Action, an approximate 5 percent reduction.

Carbon Storage

The effects of the Timber Canyon Alternative on short-term carbon storage capacity during construction and operations differ noticeably from the Proposed Action. Construction of the Timber Canyon Alternative would temporarily disturb 357 more acres of combined forest vegetation than the Proposed Action. Compared to the Proposed Action, this disturbance would result in a loss of approximately 23,000 more tons of carbon storage. Operations on the Timber Canyon Alternative would cause long-term disturbance to 41 more acres of combined forest vegetation than the Proposed Action, a doubling of the long-term loss of carbon storage capacity from operations to approximately 5,200 tons.

Table 3-264. Comparison of Emissions by Alternative

Alternative	Length (miles)	PM_{10} [1]	$PM_{2.5}$ [1]	NOx [1]	CO [1]	SOx [1]	VOCs [1]	CO_2e [1]
Proposed Action								
Morrow County (Oregon)	45.8	80.8	59.5	70.9	529.6	0.7	74.3	7,971.5
Umatilla County (Oregon)	49.5	87.3	64.4	76.6	572.4	0.8	80.3	8,615.5
Union County (Oregon)	39.4	69.5	51.2	61.0	455.6	0.6	63.9	6,857.6
Baker County (Oregon)	69.1	121.9	89.8	106.9	799.0	1.1	112.1	12,026.9
Malheur County (Oregon)	72.1	127.2	93.7	111.5	833.7	1.2	116.9	12,549.0
Owyhee County (Idaho)	23.8	42.0	30.9	36.8	275.2	0.4	38.6	4,142.4
Proposed 138/69-kV Relocate/Rebuild								
Baker County (Oregon)	5.3	9.4	6.9	8.2	61.3	0.1	8.6	922.5
Proposed Action Totals	305.0	538.1	396.4	471.9	3,526.8	4.9	494.7	53,085.4
Proposed Action and Alternative Action to Substation Comparisons								
Proposed Action Compared to Horn Butte Alternative	33.7	59.5	43.8	52.1	389.7	0.5	54.7	5,865.5
Horn Butte Alternative	26.9	47.5	35.0	41.6	311.0	0.4	43.6	4,681.9
Emissions Difference	-6.8	-12.0	-8.8	-10.5	-78.7	-0.1	-11.1	-1,183.6
Proposed Action Compared to Longhorn Alternative	33.7	59.5	43.8	52.1	389.7	0.5	54.7	5,865.5
Longhorn Alternative	19.0	33.5	24.7	29.4	219.7	0.3	30.8	3,307.0
Emissions Difference	-14.7	-26.0	-19.1	-22.7	-170.0	-0.2	-23.9	-2,558.5
Proposed Action and Alternative Action Comparisons								
Proposed Action Compared to Glass Hill Alternative	7.6	13.4	9.9	11.8	87.9	0.1	12.3	1,322.8
Glass Hill Alternative	7.6	13.4	9.9	11.8	87.9	0.1	12.3	1,322.8
Emissions Difference	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proposed Action Compared to Timber Canyon Alternative	46.3	81.7	60.2	71.6	535.4	0.7	75.1	8,058.5
Timber Canyon Alternative	57.5	101.5	74.8	89.0	664.9	0.9	93.3	10,007.9
Emissions Difference	11.2	19.8	14.6	17.4	129.5	0.2	18.2	1,949.4

Alternative	Length (miles)	PM_{10} [1]	$PM_{2.5}$ [1]	NOx [1]	CO [1]	SOx [1]	VOCs [1]	CO_2e [1]
Proposed Action Compared to Flagstaff Alternative	14.2	25.1	18.5	22.0	164.2	0.2	23.0	2,471.5
Flagstaff Alternative including 230-kV Rebuild	15.3	27.0	19.9	23.7	176.9	0.2	24.8	2,663.0
Emissions Difference	1.1	1.9	1.4	1.7	12.7	0.0	1.8	191.5
Proposed Action Compared to Malheur S Alternative	30.6	54.0	39.8	47.3	353.8	0.5	49.6	5,325.9
Malheur S Alternative	33.6	59.3	43.7	52.0	388.5	0	54.5	5,848.1
Emissions Difference	3.0	5.3	3.9	4.7	34.7	-0.5	4.9	522.2
Proposed Action Compared to Malheur A Alternative	30.6	54.0	39.8	47.3	353.8	0.5	49.6	5,325.9
Malheur A Alternative	33.2	58.6	43.2	51.4	383.9	0.5	53.8	5,778.5
Emissions Difference	2.6	4.6	3.4	4.1	30.1	0.0	4.2	452.6
Proposed Action Compared to Double Mountain Alternative	7.4	13.1	9.6	11.4	85.6	0.1	12.0	1,288.0
Double Mountain Alternative	7.4	13.1	9.6	11.4	85.6	0.1	12.0	1,288.0
Emissions Difference	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table Abbreviations: NOx = nitrogen oxides; CO = carbon monoxide; VOCs = volatile organic compounds; SOx = sulfur oxides; PM_{10} = particulate matter less than 10 microns (coarse particles); $PM_{2.5}$ = particulate matter less than 2.5 microns (fine particles); CO_2e = carbon dioxide equivalent.

Table General Notes: Grassland Substation, Burnt River Mountain Alternative, Willow Creek Alternative, Tub Mountain Alternative are not yet included. Columns may not sum exactly due to rounding and multiplication.

Table Note: [1] Emission rates are in tons per period.

3.2.10.6 Mitigation Planning

No additional mitigation of effects on air quality or climate change are proposed beyond compliance with all applicable federal, state, and local air quality regulations and the Appendix C design features.

3.2.11 Socioeconomics and Environmental Justice

3.2.11.1 Introduction

This section describes the current social, economic, and environmental justice conditions within the analysis area. This includes analysis of trends, current conditions and other factors pertaining to social, economic, and environmental justice indicators to provide an accurate assessment of baseline conditions in the project area relative to the States of Oregon and Idaho and the nation.

National Environmental Policy Act (NEPA) or Council on Environmental Quality (CEQ) regulations do not provide specific thresholds of significance for socioeconomic impact assessment. This is due to the observation that significance is contextual in nature and varies with the setting of the Proposed Action (40 CFR 1508.27[a]). As such, the following criteria were developed for the analysis of alternatives. The action would:

- Generate demand for temporary housing of construction workers that exceeds the supply of local housing or hotel/motel facilities
- Require public service expenditures substantially greater than available approved revenue
- Have a substantial impact on property values
- Disproportionately affect minority and/or low-income populations

3.2.11.2 Regulatory Framework

Federal

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The order further stipulates that the agencies conduct their programs and activities in a manner that does not exclude persons from participation in them, deny persons the benefits of them, or subject persons to discrimination because of their race, color, or national origin.

State of Oregon

The State of Oregon requires that a site certificate from the Oregon Energy Facility Siting Council (EFSC) be obtained. EFSC must find that construction and operation of the facility, taking into account mitigation, is not likely to result in significant adverse impacts to the ability of public and private providers to provide public services. The public services identified by EFSC are as follows: sewers and sewage treatment, water, stormwater drainage, solid-waste management, housing, traffic safety, police and fire protection, health care, and schools (Oregon Administrative Code 345-022-0110).

State of Idaho

There are no regulatory requirements in Idaho.

3.2.11.3 Issues Identified for Analysis

The analyses incorporated the following social and economic, and environmental justice-related issues that were raised by the public, Native American Tribes, or federal and state agencies during scoping or are issues that must be considered as stipulated in law or regulation.

- Would the project reduce property values, and therefore reduce the amount of state and local tax revenues?
- What is the potential impact on the Umatilla Indian Reservation? And, would the project affect the tribal use of land?
- Will the project affect local electricity rates?
- What is the potential for disproportionate adverse impacts on minority and low-income communities?
- How will the project affect local quality of life and business?
- Will there be a loss of income to local businesses?
- Will any of the counties benefit financially?
- How would the project affect the economy of small towns and cities along the transmission line?

3.2.11.4 Methodology

The analysis area for social and economic values and environmental justice considerations includes the six counties crossed by the proposed B2H Project and alternatives, including five counties in Oregon and one county in Idaho (Table 3-265). The analysis area also includes counties adjacent to or close to the north and south ends of the proposed project area: Gilliam County, Oregon, and Canyon and Ada counties, Idaho. These three counties are also included in the analysis area due to the assumption that project construction workers may permanently or temporarily reside in these counties.

The methodology to estimate the social and economic, and environmental justice effects of the Proposed Action and alternatives relies on secondary data compiled from federal, state, and local government sources. Key sources of data for the analysis area include:

- U.S. Census Bureau
- U.S. Bureau of Economic Analysis
- U.S. Bureau of Labor Statistics
- State of Oregon
- State of Idaho

Regional economic impacts were estimated using a multi-county input-output model developed using Impact Analysis for Planning (IMPLAN) modeling software and data (Minnesota IMPLAN Group 2011).

State and local governments were contacted for data on potentially affected community services, including solid waste management, police, fire protection and emergency response, health care, and schools.

The potential effects of the Proposed Action and alternatives are evaluated with respect to the key aspects of the socioeconomic environment, including demographic characteristics, housing, economic conditions, property values, community services, and tax revenues. These evaluations employ different resource-specific analysis methods that are described in their respective sections.

Table 3-265. Counties Crossed by the B2H Proposed Action

County	Proposed Action (miles)	% of Total Route
Morrow (Oregon)	45.8	15
Umatilla (Oregon)	49.5	16
Union (Oregon)	39.4	13
Baker (Oregon)	74.4	24
Malheur (Oregon)	72.1	24
Owyhee (Idaho)	23.8	8
Total	305.0	100

Table Abbreviations: % = percent.

Table Notes: [1] Counties are presented in this table as they are crossed by the Proposed Action from north to south. [2] The Proposed Action route extends 281.2 miles in Oregon and 23.8 miles in Idaho for a total length of 305.0 miles. The proposed alternatives involve the same set of counties as the Proposed Action.

Key project-related income generating indicators used in the socioeconomic analysis include projected construction employment and expenditures. Operations-related employment and expenditures are also used in the analysis. Construction employment and spending estimates are disaggregated by county, where appropriate, primarily based on the share of overall construction that would occur in that county. These estimates represent the best available information and a reasonable approximation of the likely distribution of potential impacts but should not be considered precise forecasts. In most cases, estimated impacts may be compared with the existing conditions data presented in this section. For example, estimated property tax revenues may be compared with total property tax revenues collected in 2010.

The environmental justice component of this analysis involves identifying whether the proposed B2H Project would result in disproportionately high and adverse impacts on minority and/or low-income populations. This typically involves two steps: 1) identifying whether minority and/or low-income communities are present in the analysis area and 2) if these types of communities are present, evaluating whether high and adverse human-health or environmental effects will disproportionately affect the identified communities.

Data from the U.S. Census Bureau are used to identify minority and/or low-income communities that could be affected by the B2H Project. The results of other resource-specific analyses conducted for the project may then be used to evaluate the potential for adverse or human health effects.

The analysis in Table 3-266 assumes the proposed B2H Project would be constructed in two, approximately 150-mile-long spreads built concurrently. The affected counties for each construction spread are identified in Table 3-266.

Table 3-266. Proposed B2H Construction Spreads and Affected Counties

Construction Spread	Proposed Action (miles)	Counties
1	150	Oregon: Morrow, Umatilla, Union, Baker
2	150	Oregon: Baker, Malheur Idaho: Owyhee

Table General Note: Total miles do not sum to 305.3 miles because the total length of the Proposed Action includes rebuilding 5.3 miles of 138 kilovolt (kV) and 69-kV of transmission line, this rebuild is not included in the construction spreads identified in this table.

3.2.11.5 Affected Environment

Population Characteristics and Projections

The nine counties comprising the overall socioeconomic and environmental justice analysis area had a combined population of 754,942 in 2010 (Table 3-267) with 23% or 171,783 people located in the six counties that would be crossed by the Proposed Action. The vast majority of the remaining 77% of the overall analysis area population was located in Ada and Canyon counties, Idaho. Although these counties are not crossed by the Proposed Action, these counties are included in the socioeconomic analysis area because they include relatively large population centers—Boise in Ada County and Nampa in Canyon County—that are within commuting distance of Hemingway Substation and the south portion of the Proposed Action. Boise had a 2010 population of 205,671; Nampa had a 2010 population of 81,557.

The majority of the six counties crossed by the Proposed Action are sparsely populated, with an overall average population density of 8.6 persons per square mile (persons/square mile) in 2010 compared to statewide averages of 39.9 persons/square mile in Oregon and 19.0 persons/square mile in Idaho (Idaho Department of Labor 2011a; Portland State University 2011; U.S. Census Bureau 2011a). Population densities in the six counties ranged from 1.5 persons/square mile in Owyhee County, Idaho to 23.6 persons/square mile in Umatilla County, Oregon.

Table 3-267. Population in the B2H Analysis Area: 1990, 2000, and 2010

				1990-2000 Change		2000-2010 Change	
Counties and Cities	**1990**	**2000**	**2010**	**Number**	**Percent (%)**	**Number**	**Percent (%)**
Baker County Oregon	15,317	16,741	16,134	1,424	9.3	-607	-3.6
Baker City	9,140	9,860	9,828	720	7.9	-32	-0.3
Gilliam County Oregon	1,717	1,915	1,871	198	11.5	-44	-2.3
Arlington	425	524	586	99	23.3	62	11.8
Malheur County Oregon	26,038	31,615	31,313	5,577	21.4	-302	-1.0
Adrian	131	147	177	16	12.2	30	20.4
Ontario	9,392	10,985	11,366	1,593	17.0	381	3.5

Counties and Cities	1990	2000	2010	1990-2000 Change		2000-2010 Change	
				Number	Percent (%)	Number	Percent (%)
Morrow County Oregon	7,625	10,995	11,173	3,370	44.2	178	1.6
Boardman	1,387	2,855	3,220	1,468	105.8	365	12.8
Fairview	2,391	7,561	8,920	5,170	216.2	1,359	18.0
Umatilla County Oregon	59,249	70,548	75,889	11,299	19.1	5,341	7.6
Hermiston	10,040	13,154	16,745	3,114	31.0	3,591	27.3
Pendleton	15,126	16,354	16,612	1,228	8.1	258	1.6
Pilot Rock	1,478	1,532	1,502	54	3.7	-30	-2.0
Umatilla	3,046	4,978	6,906	1,932	63.4	1,928	38.7
Union County Oregon	23,598	24,530	25,748	932	3.9	1,218	5.0
La Grande	11,766	12,327	13,082	561	4.8	755	6.1
Union	1,847	1,926	2,121	79	4.3	195	10.1
Counties Total	133,544	156,344	162,128	NA	NA	NA	NA
Oregon Total	2,842,321	3,421,399	3,831,074	579,078	20.4	409,675	12.0
Ada County Idaho	205,775	300,906	392,365	95,131	46.2	91,459	30.4
Boise	125,738	185,787	205,671	60,049	47.8	19,884	10.7
Meridian	9,596	34,919	75,092	25,323	263.9	40,173	115.0
Canyon County Idaho	90,075	131,441	188,923	43,365	45.9	57,482	43.7
Caldwell	18,400	25,967	46,237	7,567	41.1	20,270	78.1
Nampa	28,365	51,867	81,557	23,502	82.9	29,690	57.2
Owyhee County Idaho	8,392	10,644	11,526	2,252	26.8	882	8.3
Homedale	1,963	2,528	2,633	565	28.8	105	4.2
Marsing	798	890	1,031	92	11.5	141	15.8
Counties Total	304,242	442,991	592,814	NA	NA	NA	NA
Idaho Total	1,006,749	1,293,953	1,567,582	287,204	28.5	273,629	21.1
United States	248,709,873	281,421,906	308,745,538	32,712,033	13.2	27,323,632	9.7

Table Source: Idaho Department of Labor 2011a; Portland State University 2011; U.S. Census Bureau 1990, 1995, 2000a.

Table General Note: Counties Total = total population for counties within State. Three counties in Idaho and six counties in Oregon.

Table Note: [1] Shaded rows represent counties that comprise the analysis area.

The population in Oregon increased at faster rates than the national average from 1990 to 2000 and from 2000 to 2010. Population increased in all 6 Oregon counties in the analysis area from 1990 to 2000, with increases ranging from 4 percent in Union County to 44 percent in Morrow County.

The population in Baker, Gilliam, and Malheur counties decreased from 2000 to 2010. The population increases in Morrow, Umatilla, and Union counties were smaller than the statewide average.

The population in Idaho increased more than twice the national average between 1990 and 2000 and again between 2000 and 2010. All three Idaho counties in the analysis area experienced dramatic increases in population between 1990 and 2000 (26.8 percent in Owyhee County, 46.2 percent in Ada County, and 46.9 percent in Canyon County) and the population continued to grow between 2000 and 2010 (8.3 percent in Owyhee County, 30.4 percent in Ada County, and 43.7 percent in Canyon County).

Population data are also presented for communities within 25 miles of the Proposed Action and alternatives in Table 3-267. The closest community to the project is the city of Boardman. Boise and Nampa, the most populated communities in Idaho within 25 miles, are located about 23 miles and 12 miles from the Proposed Action route, respectively. The cities of Hermiston and Pendleton, both in Umatilla County, are the largest cities in Oregon within 25 miles of the B2H Project, with 2010 populations of 16,745 and 16,612, respectively (Table 3-267). Other relatively large communities within 25 miles in Oregon include La Grande (13,082) in Union County and Ontario (11,366) in Malheur County.

Population growth results from either natural increase (more births than deaths) or net in-migration (when more people move to an area then leave). From 2000 to 2009, all six Oregon counties experienced net out-migration (more people moving out of the area). Over the same time period, two of the Oregon counties (Baker and Gilliam) also experienced a natural decrease (more deaths than births) (U.S. Census Bureau 2010a).

The three Idaho counties in the analysis area all experienced a natural increase from 2000 to 2009, with Ada and Canyon Counties also experiencing net in-migration (U.S. Census Bureau 2010a).

Population projections developed by the Oregon Office of Economic Analysis (2004) anticipated that the state's overall population would increase by 13 percent between 2010 and 2020. The population in Umatilla County was also projected to increase by 13 percent, and the population in Morrow County projected to increase by 22 percent. Population is also expected to increase in the other analysis area counties in Oregon but at a slower rate than the state average (Oregon Office of Economic Analysis 2004).

The population in Idaho is expected to increase by 15 percent between 2010 and 2020. The population in Owyhee County is projected to increase at a slower rate (11%), and larger than average increases are projected for Ada and Canyon counties, with 22 percent and 17 percent, respectively (Valley County Economic Development Council 2008).

RACE AND ETHNICITY

The majority of the populations in Oregon (78%) and Idaho (84%) were identified as White in the 2010 Census (Table 3-268). In Oregon, the populations of Baker, Gilliam, and Union counties were less diverse than the state as a whole, with more than 90 percent of their respective populations identifying as White in 2010. The populations in Malheur, Morrow, and Umatilla counties were more diverse than the state in 2010. People identifying as Hispanic or Latino were the largest minority group in all three counties, accounting for 32 percent, 31 percent, and 24 percent of the respective total county populations. The Umatilla Indian Reservation is located in Umatilla County, and Native Americans accounted for a relatively large share of that county's total population—3 percent versus 1 percent statewide.

In Idaho, the share of the population identifying as White in Ada County (86%) was similar to the state average (84%) in the 2010 Census (Table 3-268). The populations in Canyon and Owyhee counties were more diverse than the state in 2010, with people identifying as Hispanic or Latino the largest minority group in both counties. Part of the Duck Valley Indian Reservation is located in the south part Owyhee County and Native Americans accounted for 4 percent of that county's total population versus 1 percent statewide.

Table 3-268. Race and Ethnicity 2010

		% of Total Population				
Geographic Area	**Total Population**	**White [1]**	**Hispanic or Latino**	**American Indian and Alaska Native [1]**	**Black or African American [1]**	**Other Race [1], [2]**
Baker	16,134	93	3	1	0	3
Gilliam	1,871	92	5	1	0	2
Malheur	31,313	64	32	1	1	3
Morrow	11,173	65	31	1	0	3
Umatilla	75,889	69	24	3	1	3
Union	25,748	91	4	1	0	4
Oregon County Total	3,831,074	78	12	1	2	7
Ada	392,365	86	7	1	1	5
Canyon	188,923	72	24	1	0	3
Owyhee	11,526	68	26	4	0	2
Idaho County Total	1,567,582	84	11	1	1	3

Table Source: U.S. Census Bureau 2011b.

Table Notes: [1] Non-Hispanic only. The federal government considers race and Hispanic/Latino origin (ethnicity) to be separate and distinct concepts. The data summarized in this table present Hispanic/Latino as a separate category. People identifying as Hispanic or Latino origin and counted in this category may be of any race. [2] The Other Race category includes census respondents identifying as Asian, Native Hawaiian, other Pacific Islander, some other race, or two or more races.

HOUSING

Housing estimates are presented in Table 3-269 for the nine counties within the analysis area and for the states of Oregon and Idaho. These estimates suggest that limited housing is available for rent in Gilliam and Owyhee counties, with estimates of less than 100 available units in each county. An estimated 718 units are available for rent in Umatilla County, Oregon, and an estimated 4,038 units and 1,840 units are available in Ada and Canyon counties, Idaho, respectively. Table 3-270 shows housing units and availability for the incorporated cities in the analysis area.

The availability of temporary housing varies seasonally and geographically within the counties that would be crossed by the project. Demand for temporary housing is generally greatest during the tourism season in the summer months. Statewide in Oregon, the average hotel and motel occupancy rate in 2009 was 63.2 percent in June compared to 38.3 percent in December, with an annual average rate of 53.9 percent (Travel Oregon 2009a, 2009b). Hotel and motel occupancy rates also vary by region.

Table 3-269. Housing Data by State and County, 2010

Geographic Area	Total Housing Units	Number of Rental Units [1]	Units Available for Rent	Rental Vacancy Rate (%)	For Seasonal, Recreational, or Occasional Use [2]
Baker County	8,826	2,431	181	7	1,058
Gilliam County	1,156	365	60	16	116
Malheur County	11,692	4,238	297	7	303
Morrow County	4,442	1,191	70	6	242
Umatilla County	29,693	10,752	718	7	888
Union County	11,489	3,931	283	7	281
Oregon County Total [3]	67,298	22,908	1,609	7	2,888
Ada County	159,471	51,081	4,038	8	1,018
Canyon County	69,409	20,653	1,840	9	280
Owyhee County	4,781	1,332	104	8	307
Idaho County Total [3]	233,661	73,066	5,982	8	1,605

Table Source: U.S. Census Bureau 2012a.

Table Notes: [1] Total number of housing units consists of housing units classified in the 2010 Census as renter occupied, for rent, rented, or not occupied. [2] These are vacant units used or intended for use only in certain seasons or for weekend or other occasional use throughout the year. These units are not included in the Number of Rental Units or Unit Available for Rent totals presented here, but some units may be available for rent. [3] These totals are the sum of the potentially affected counties in each state (six in Oregon; three in Idaho), not the total for each state.

Table 3-270. Housing Data by City, 2010

Community	Total Housing Units	Number of Rental Units [1]	Units Available for Rent	Rental Vacancy Rate	For Seasonal, Recreational, or Occasional Use [2]
Baker City (Baker County, OR)	4,653	1,675	120	7	59
Arlington City (Gilliam County, OR)	315	129	27	21	20
Condon City (Gilliam County, OR)	455	132	16	12	28
Ontario City (Malheur County, OR)	4,620	2,190	139	6	22
Boardman City (Morrow County, OR)	1,017	390	22	6	8
Hermiston City (Umatilla County, OR)	6,373	2,854	97	3	39
Pendleton City (Umatilla County, OR)	6,800	3,029	274	9	54
Umatilla City (Umatilla County, OR)	1,766	753	63	8	17
La Grande City (Union County, OR)	5,794	2,705	194	7	43
Boise City (Ada County, ID)	92,700	36,694	3,154	9	595
Eagle City (Ada County, ID)	7,570	1,385	76	5	93
Garden City (Ada County, ID)	5,429	2,108	266	13	63
Meridian City (Ada County, ID)	26,674	6,171	293	5	135
Caldwell City (Canyon County, ID)	69,409	20,653	1,840	9	280
Nampa City (Canyon County, ID)	30,507	10,544	1,024	10	105
Cities in Owyhee County, ID	N/A	N/A	N/A	N/A	N/A

Table Source: U.S. Census Bureau 2012a.

Table Abbreviations: N/A = data not available.

Table Notes: [1] Total number of housing units consists of housing units classified in the 2010 Census as Renter occupied, For rent, or Rented, not occupied. [2] These are vacant units used or intended for use only in certain seasons or for weekend or other occasional use throughout the year. These units are not included in the Number of Rental Units or Unit Available for Rent totals presented here, but some units may be available for rent.

RV Parks

Comprehensive data are not available on recreational vehicle (RV) parks in the project vicinity. Table 3-271 presents data for RV parks in the analysis area by community. These data were compiled from travel web sites, primarily TravelOregon.com, VisitIdaho.org, and rvparking.com, but do not necessarily account for all of the RV parks in the vicinity of the project. Approximate numbers of spaces are provided. These represent the total approximate number of spaces available at the identified RV parks in each community, not the number that would necessarily be available to rent.

Table 3-271. RV Parks by Community

County	Community	Number of RV Parks [1]	Estimated Number of RV Spaces [2]
Baker (Oregon)	Baker City	5	219
Gilliam (Oregon)	Arlington	3	73
Malheur (Oregon)	Adrian	1	64

County	Community	Number of RV Parks [1]	Estimated Number of RV Spaces [2]
Malheur (Oregon)	Ontario	2	67
Malheur (Oregon)	Vale	2	68
Morrow (Oregon)	Boardman	2	166
Umatilla (Oregon)	Hermiston	5	263
Umatilla (Oregon)	Pendleton	8	425
Umatilla (Oregon)	Umatilla	2	66
Union (Oregon)	La Grande	7	404
Union (Oregon)	Union	2	28
Ada (Idaho)	Boise	4	285
Ada (Idaho)	Meridian	2	263
Canyon (Idaho)	Caldwell	4	352
Canyon (Idaho)	Nampa	1	88
Owyhee (Idaho)	Homedale	2	64
Owyhee (Idaho)	Marsing	2	70

Table Source: rvparking.com 2012; TravelOregon.com 2012; VisitIdaho.org 2012

Table General Note:

Table Notes: [1] These data were compiled from travel web sites and do not necessarily account for all RV parks in the vicinity of the project. [2] These estimates represent the total number of spaces available at the identified RV parks in each community, not the number that will necessarily be available to rent.

Hotels and Motels

Hotel and motel accommodations for each county are listed in Table 3-272 and by community in Table 3-273. These data do not necessarily account for all of the existing hotel, motel, and bed and breakfast rooms within 20 miles of the proposed B2H Project because the Smith Travel Research data does not include establishments with less than 15 rooms, and the data compiled on the state tourism Web sites, which does include hotels, motels, and bed and breakfast inns with less than 15 rooms, are for participating businesses only. The hotel and motel data summarized in Table 3-272 and Table 3-273 do, however, represent a reasonable approximation of the number of hotel and motel rooms based on the best available data.

Table 3-272. Hotels and Motels by County

County	Number of Hotels [1]	Number of Rooms	Estimated Number of Available Rooms [2]
Baker (Oregon)	10	443	163
Gilliam (Oregon)	5	110	40
Malheur (Oregon)	12	793	292
Morrow (Oregon)	3	140	52
Umatilla (Oregon)	24	1,639	603

County	Number of Hotels [1]	Number of Rooms	Estimated Number of Available Rooms [2]
Union (Oregon)	10	427	157
Ada (Idaho)	84	6,915	2,545
Canyon (Idaho)	22	1,054	388
Owyhee (Idaho)	2	13	5

Table Sources: Smith Travel Research 2009, 2011; Travel Oregon 2009a; TravelOregon.com 2012; VisitIdaho.org 2012.

Table Notes: [1] Data were compiled by Smith Travel Research and include hotels, motels, and bed and breakfasts with 15 or more rooms. [2] Average number of rooms is estimated based on the average hotel occupancy rate in Oregon in June 2009.

Table 3-273. Hotels and Motels by Community

County	Community	Number of Hotels [1]	Number of Rooms	Estimated Number of Available Rooms [2]
Baker (Oregon)	Baker City	10	443	163
Gilliam (Oregon)	Arlington	2	68	25
Gilliam (Oregon)	Condon	3	42	15
Malheur (Oregon)	Ontario	12	793	292
Morrow (Oregon)	Boardman	3	140	52
Umatilla (Oregon)	Hermiston	5	365	134
Umatilla (Oregon)	Pendleton	17	1,198	441
Umatilla (Oregon)	Umatilla	2	76	28
Union (Oregon)	La Grande	9	423	156
Union (Oregon)	Union	1	4	1
Ada (Idaho)	Boise	71	5,810	2,138
Ada (Idaho)	Eagle	1	98	36
Ada (Idaho)	Garden City	2	50	18
Ada (Idaho)	Meridian	10	957	352
Canyon (Idaho)	Caldwell	9	254	93
Canyon (Idaho)	Nampa	13	800	294
Owyhee (Idaho)	Homedale	1	8	3
Owyhee (Idaho)	Marsing	1	5	2

Table Source: Smith Travel Research 2009, 2011; Travel Oregon 2009a; TravelOregon.com 2012; VisitIdaho.org 2012

Table Notes: [1] Data were compiled by Smith Travel Research and include hotels, motels, and bed and breakfasts with 15 or more rooms. These data are supplemented by hotel information compiled from other sources, primarily TravelOregon.com and VisitIdaho.org. Data are for selected communities within each county only. [2] The number of available rooms was estimated for each community based on the average hotel occupancy rate in Oregon in June 2009.

Economy and Employment

Agriculture is an important employer in the six counties in Oregon, ranging from 7 percent of total employment in Union County in 2009 to 23 percent in Morrow County, compared to 3.1 percent of total employment statewide (Table 3-274). All of the counties also have a larger share of employment concentrated in government, ranging from 14.2 percent of total employment in Baker County to 20.3 percent in Malheur County, compared to 13.5 percent statewide.

Morrow County had a relatively high concentration of employment in manufacturing, and Gilliam and Umatilla counties had relatively high concentrations of employment in transportation and warehousing.

Agriculture is also an important employer in Owyhee County, Idaho, with farm employment accounting for 24.9 percent of total employment, compared to 4.2 percent statewide. Canyon County, Idaho, had a relatively high share of employment in manufacturing, which accounted for 10.4 percent of total employment, compared to 6.7 percent statewide.

Trends in the annual, seasonally adjusted employment rates for the six analysis area counties in Oregon and the state as a whole are shown in Table 3-275. Seasonally adjusted unemployment rates were lower than the Oregon state average in two of the six analysis area counties in Oregon (Gilliam and Morrow) in September 2011; rates were equal to, and slightly higher than, the state average in the other counties (Table 3-275).

Adjusted unemployment rates were lower than the Oregon state average in two of the six analysis area counties in Oregon (Gilliam and Morrow) in September 2011; rates were equal to, and slightly higher than, the state average in the other counties (Table 3-275). Trends in the adjusted unemployment rates for the six analysis area counties in Oregon and the state as a whole are shown in Figure 3-51.

Table 3-274. County and State Employment by Economic Section, 2010

Economic Sector	Baker	Gilliam	Malheur	Morrow	Umatilla	Union	Oregon	Ada	Canyon	Owyhee	Idaho
Total employment [1]	8,721	1,561	17,197	6,016	38,381	14,720	2,201,451	263,700	76,224	4,272	877,367
% of Total [2]											
Farm Employment	10.5	16.7	12.3	23.3	8.2	7.1	3.2	0.7	4.3	25.3	4.3
Mining, forestry, and other	(D)	(L)	(D)	(D)	2.8	(D)	1.5	0.3	1.6	(D)	1.8
Utilities	0.9	(L)	0.2	(D)	0.5	(D)	0.2	0.3	0.2	(D)	0.3
Construction	5.0	12.5	2.3	1.5	3.9	4.9	4.8	5.6	7.2	5.5	6.3
Manufacturing	7.0	(D)	6.1	19.4	8.5	8.2	8.1	5.9	10.6	5.5	6.7
Wholesale trade	1.4	(D)	4.5	5.2	2.2	1.7	3.7	3.6	3.3	2.9	3.3
Retail trade	11.8	(D)	12.7	5.0	10.5	12.3	10.5	11.1	12.3	8.1	11.3
Transportation and warehousing	3.0	8.8	2.9	(D)	7.1	(D)	2.8	2.2	3.9	(D)	2.9
Real Estate	4.1	2.1	2.1	2.4	2.6	2.4	4.5	5.7	4.3	(D)	4.8
Consumer Services [3]	6.4	3.5	12.0	7.0	11.8	13.4	14.6	13.2	11.4	10.8	13.4
Producer Services [3]	11.6	(D)	(D)	(D)	(D)	10.1	18.7	24.9	14.3	(D)	18.4
Social Services [3]	12.6	(D)	11.9	5.4	11.2	14.2	13.9	13.8	14.0	(D)	11.9
Government	13.9	14.5	20.0	14.4	18.8	18.9	13.6	12.6	12.7	17.9	14.5

Table Source: U.S. Bureau of Economic Analysis 2012a

Table Notes: [1] U.S. Bureau of Economic Analysis 2012a. [2] Percentages for the counties do not sum to 100 because employment counts are not provided for sectors with less than 10 jobs (L) or for sectors where counts will disclose confidential information (D). These numbers are, however, included in the totals. [3] Nine 2-digit North American Industry Classification System (NAICS) service categories are combined here into these 3 divisions for ease of presentation; Consumer services consists of other services; arts, entertainment, and recreation; and accommodation and food services. Producer services consists of information; finance and insurance; professional and technical services; management of companies and enterprises; and administrative and waste services; Social services consists of educational services and health care and social assistance.

Table 3-275 shows that the seasonally adjusted unemployment rate in Owyhee County, Idaho, was less than two-thirds the state average in September 2011. The corresponding rates in Ada and Canyon counties were lower (-1.2 percent) and higher (+2.6 percent) than the state average, respectively. Statewide, the unemployment rate in Idaho in September 2011 was lower than in September 2010. This was also the case with Ada and Canyon counties, while the unemployment rate in Owyhee County was very slightly higher than it was in September 2010. Figure 3-52 shows that unemployment rates in Idaho and the three analysis area counties in Idaho reached their highest annual levels in a decade in 2010.

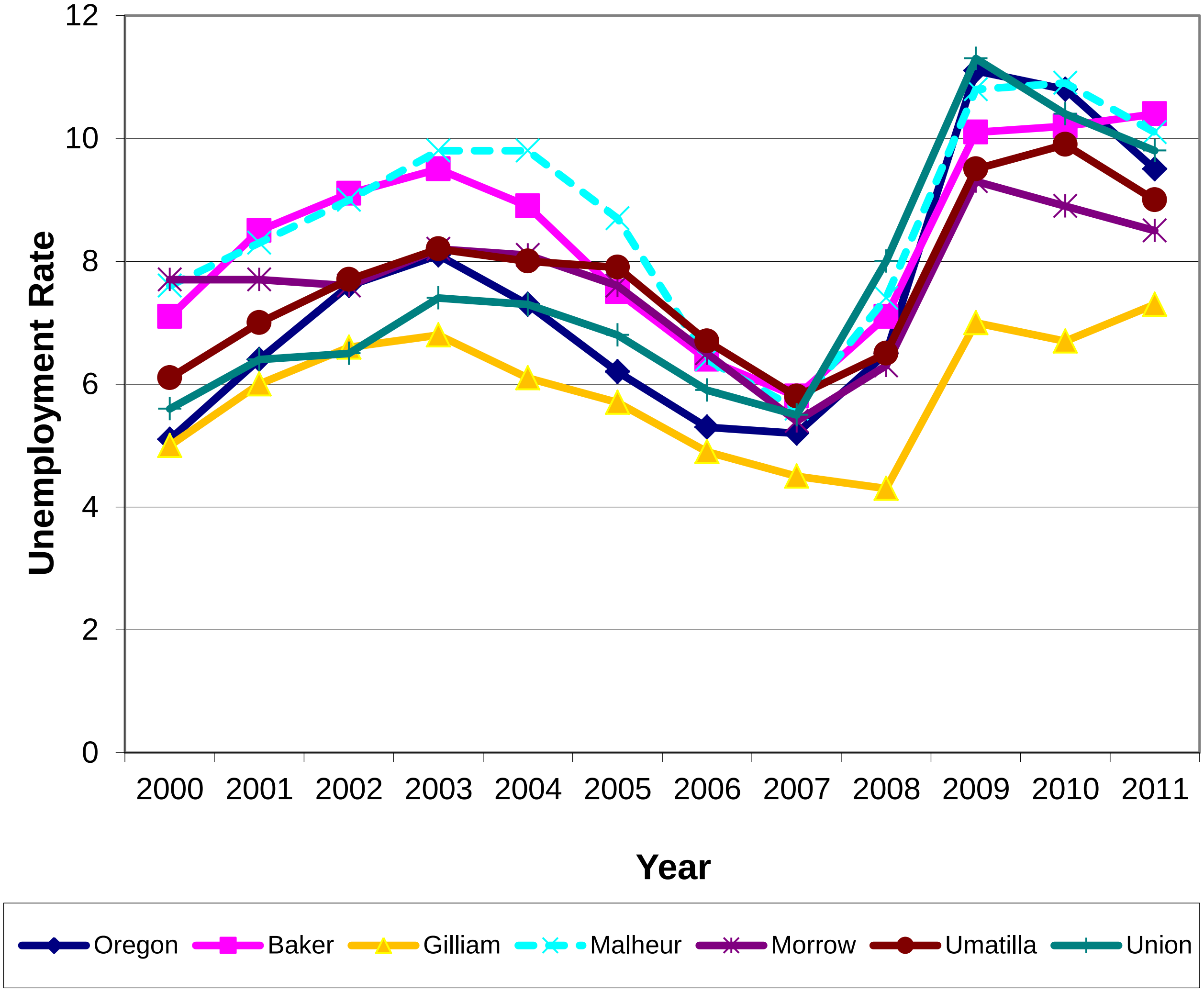
Employee earnings for 2010 are presented in Table 3-276 (Oregon) and Table 3-277 (Idaho) by economic sector for the affected counties, states, and the United States.

Table 3-275. Employment Overview, September 2012

Geographic Area	Civilian Labor Force [1], [2]	Employed [2]	Unemployed [2]	Adjusted Unemployment Rates [3]	
				Sept 2011	Sept 2012
Baker	7,480	6,897	583	10.8	9.9
Gilliam	1,059	985	74	7.3	8.7
Malheur	13,552	12,490	1,062	11.6	9.9
Morrow	5,720	5,327	393	8.9	8.9
Umatilla	40,493	37,801	2,692	9.6	8.3
Union	12,270	11,343	927	10.1	9.0
Oregon	1,972,049	1,821,671	150,378	9.6	8.7
Ada	203,182	190,462	12,721	7.8	6.3
Canyon	86,889	79,956	6,933	11.6	8.0
Owyhee	4,660	4,435	224	5.3	4.8
Idaho	775,956	720,648	55,308	9.0	7.1

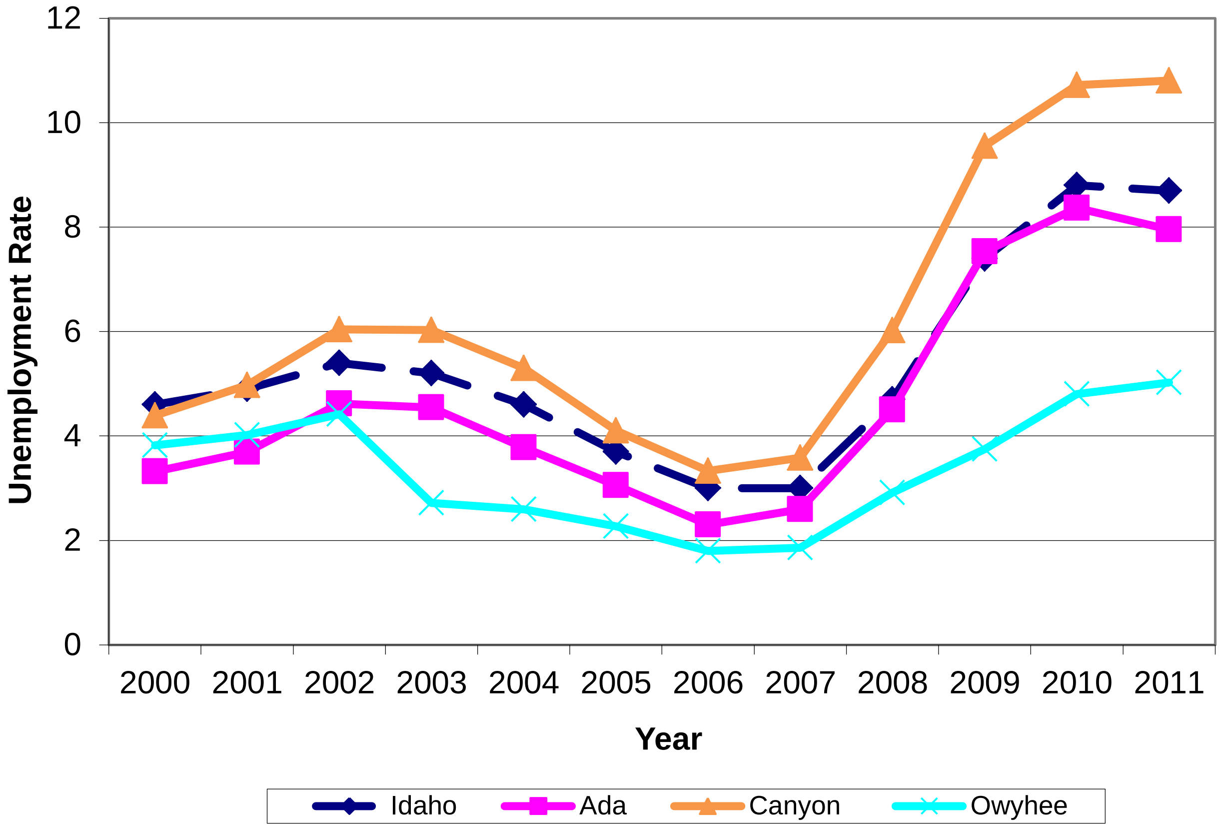
Table Source: Oregon Employment Department 2012; Idaho Department of Labor 2012a

Table Notes: [1] Civilian labor force includes employed and unemployed workers 16 years and older by place of residence. Employed includes non-farm payroll employment and the self-employed. [2] Numbers for the civilian labor force, employed, and unemployed for Oregon are actual counts and not seasonally adjusted. [3] All unemployment rates presented here are seasonally adjusted. Unemployment rates fluctuate with the seasons, with unemployment generally higher during the winter months. Adjusted unemployment rates are adjusted to account for these known fluctuations to reveal underlying economic trends.



***Source*: Oregon Employment Department 2011b, 2012**

Figure 3-51. Annual Unemployment Rates in Oregon, 2000, 2011



Source: Idaho Department of Labor 2011b, 2012a

Figure 3-52. Annual Unemployment Rates in Idaho, 2000, 2011

Table 3-276. Oregon Employee Earnings by Economic Sector 2010 (thousands of dollars)

Economic Sector	Oregon	County						United States
		Baker	Gilliam	Malheur	Morrow	Umatilla	Union	
Total Earnings	99,690,904	242,856	59,420	568,984	306,168	1,577,948	487,397	8,986,229,000
Farm earnings	1,185,356	2,033	8,412	38,460	104,172	122,903	16,758	77,215,000
Nonfarm earnings	98,505,548	240,823	51,008	530,524	201,996	1,455,045	470,639	8,909,014,000
Private Employment	80,432,010	172,913	40,433	348,522	156,473	1,030,297	340,585	7,266,340,000
Forestry, fishing, and related activities	1,034,412	(D)	(D)	(D)	(D)	30,807	(D)	22,548,000
Mining	117,996	(D)	(L)	(D)	(D)	1,541	(D)	83,081,000
Utilities	615,620	7,336	(L)	1,610	(D)	20,951	(D)	73,306,000
Construction	5,568,431	9,926	14,696	10,830	2,466	60,286	24,348	479,541,000
Manufacturing	12,261,445	26,803	(D)	38,608	58,906	127,890	60,336	891,607,000
Wholesale trade	6,299,209	3,491	(D)	29,620	15,765	40,221	10,205	456,185,000
Retail trade	6,735,049	21,643	(D)	59,841	5,632	106,883	43,482	553,528,000
Transportation and warehousing	3,173,308	10,924	7,977	17,353	(D)	161,751	(D)	295,408,000
Information	2,787,863	3,255	277	3,787	1,385	13,603	4,990	294,252,000
Finance and insurance	4,703,080	5,935	719	12,483	2,953	32,481	11,780	647,655,000
Real estate and rental and leasing	1,764,191	4,796	203	5,457	3,703	18,746	4,203	148,119,000
Professional, scientific, and technical services	7,092,571	8,322	(D)	13,307	(D)	(D)	13,699	886,746,000
Management of companies and enterprises	2,857,611	1,344	319	(D)	(D)	(D)	2,678	223,576,000
Administrative and waste management services	3,508,708	3,599	(D)	(D)	4,151	100,670	6,931	353,648,000
Educational services	1,275,488	1,026	(L)	1,242	(L)	2,155	904	146,724,000
Health care and social assistance	12,627,100	34,896	2,175	71,192	6,481	156,548	75,076	1,000,258,000
Arts, entertainment, and recreation	832,128	(D)	(D)	1,200	398	3,471	2,149	100,953,000
Accommodation and food services	3,365,064	(D)	(D)	19,207	3,322	41,825	16,378	278,844,000
Other services, except public administration	3,812,736	14,249	1,970	22,640	7,068	55,925	17,144	330,361,000

Economic Sector	Oregon	County						United States
		Baker	Gilliam	Malheur	Morrow	Umatilla	Union	
Government and government enterprises	18,073,538	67,910	10,575	182,002	45,523	424,748	130,054	1,642,674,000
Federal, civilian	3,003,199	21,114	726	18,472	5,372	86,147	21,002	320,396,000
Military	671,840	2,145	249	4,175	2,118	11,149	3,438	178,831,000
State and local	14,398,499	44,651	9,600	159,355	38,033	327,452	105,614	1,143,447,000

Table Source: U.S. Bureau of Economic Analysis 2012b.

Table Notes: Earnings are shown in thousands of dollars. (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals. (L) Less than 10 jobs, but the estimates for this item are included in the totals.

1 **Table 3-277. Idaho Employee Earnings by Economic Sector, 2010**

		County			
Economic Sector	**Idaho**	**Ada**	**Canyon**	**Owyhee**	**United States**
Total Earnings	34,771,452	12,591,899	2,429,507	176,015	8,986,229,000
Farm earnings	1,566,389	46,558	135,413	82,616	77,215,000
Nonfarm earnings	33,205,063	12,545,341	2,294,094	93,399	8,909,014,000
Private Employment	26,558,649	10,559,944	1,853,714	62,990	7,266,340,000
Forestry, fishing, and related activities	353,988	11,561	31,052	(D)	22,548,000
Mining	198,489	14,182	1,223	(D)	83,081,000
Utilities	298,188	120,921	14,430	(D)	73,306,000
Construction	2,344,748	910,332	175,105	9,445	479,541,000
Manufacturing	3,536,737	1,443,561	327,397	10,536	891,607,000
Wholesale trade	1,656,966	651,776	131,849	5,698	456,185,000
Retail trade	2,678,536	889,798	231,909	6,311	553,528,000
Transportation and warehousing	1,109,237	262,103	129,658	(D)	295,408,000
Information	539,116	235,944	29,601	1,010	294,252,000
Finance and insurance	1,407,363	714,808	64,794	(D)	647,655,000
Real estate and rental and leasing	477,284	189,503	25,419	(D)	148,119,000
Professional, scientific, and technical services	3,121,072	1,257,264	95,791	(D)	886,746,000
Management of companies and enterprises	580,533	436,479	18,127	(D)	223,576,000
Administrative and waste management services	1,339,987	757,332	77,400	3,912	353,648,000
Educational services	340,199	104,639	48,056	(D)	146,724,000
Health care and social assistance	3,995,464	1,694,208	284,516	(D)	1,000,258,000
Arts, entertainment, and recreation	332,291	125,106	7,007	315	100,953,000
Accommodation and food services	982,098	331,260	55,123	2,283	278,844,000
Other services, except public administration	1,266,353	409,167	105,257	4,575	330,361,000

		County			
Economic Sector	**Idaho**	**Ada**	**Canyon**	**Owyhee**	**United States**
Government and government enterprises	6,646,414	1,985,397	440,380	30,409	1,642,674,000
Federal, civilian	1,233,320	559,797	33,349	4,243	320,396,000
Military	657,146	77,924	34,721	2,095	178,831,000
State and local	4,755,948	1,347,676	372,310	24,071	1,143,447,000

Table Source: U.S. Bureau of Economic Analysis 2012b

Table Notes: Earnings are shown in thousands of dollars; (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

AGRICULTURE

Land use in three of the six analysis area counties in Oregon (Gilliam, Morrow, and Umatilla counties) is largely agricultural, ranging from about 70 percent of the total land area in Umatilla County to 95 percent in Gilliam County (Table 3-278). Agriculture also accounted for a larger share of total land use than the state average in two of the other analysis area counties in Oregon (Union and Baker counties). In Malheur County, agricultural lands accounted for just 19 percent of the total county area. By comparison, the statewide average was 27 percent. The average farm size ranged from 554 acres in Union County to 4,472 acres in Gilliam County, compared to a statewide average of 425 acres.

The market value of agricultural products sold in the six analysis area counties in Oregon in 2007 ranged from about $37 million in Gilliam County to about $354 million in Morrow County. Umatilla County ranked second in gross farm and ranch sales in Oregon in 2009, with Morrow and Malheur counties ranked third and eighth, respectively (Oregon Department of Agriculture 2010). Crops comprised the majority of the total value of agricultural products sold in three of the six counties (Gilliam, Umatilla, and Union counties); livestock and poultry accounted for more than half of the total value in the other three counties (Baker, Malheur, and Morrow counties).

Table 3-278. Summary of Agriculture by County and State, 2007

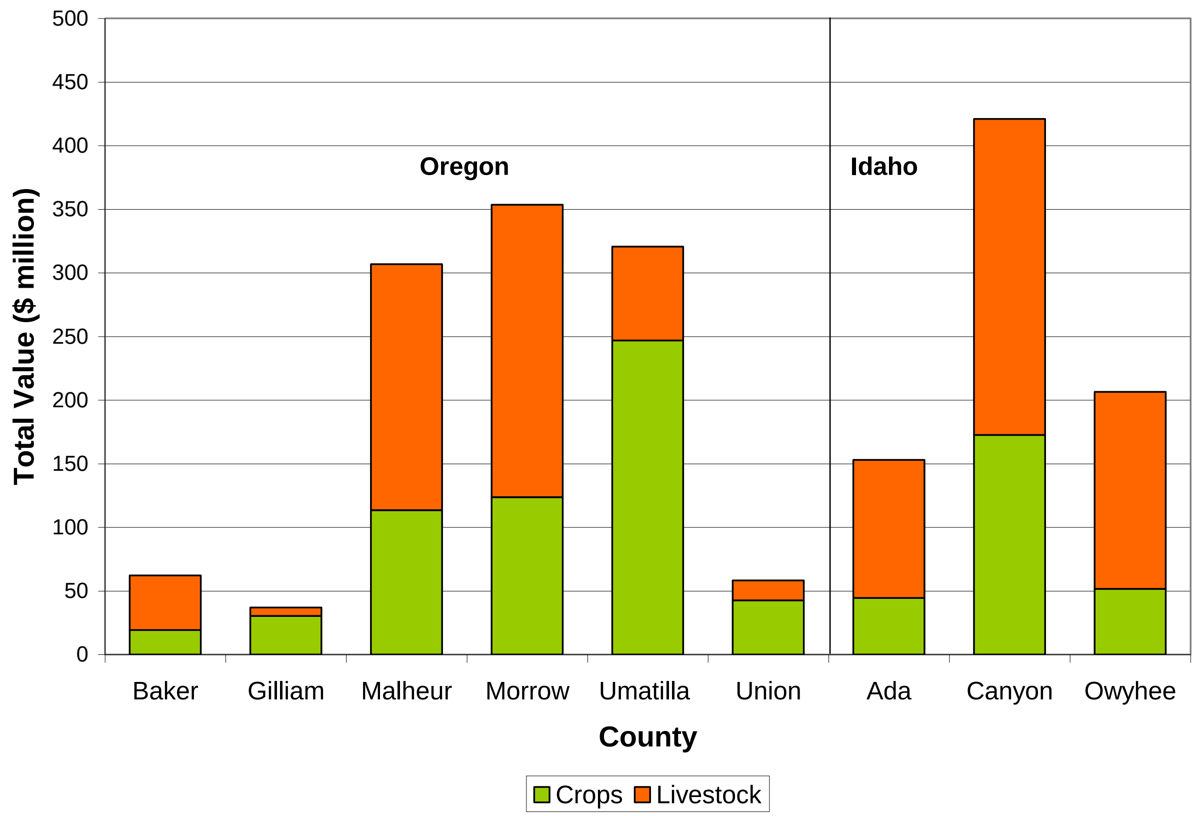
Geographic Area	Number of Farms	Farm Land (acres)	Total County Area (%)	Total Market Value of Agriculture Products Sold (Dollars)	Percent of Total Market Value (Crops)	Percent of Total Market Value (Livestock)
Baker	688	711,809	36	62,138	31	69
Billiam	164	733,387	95	37,048	82	18
Malheur	1,250	1,170,664	19	306,795	37	63
Morrow	421	1,104,250	85	353,519	35	65
Umatilla	1,658	1,447,321	70	320,679	77	23
Union	880	487,584	37	58,244	73	27
Oregon	38,553	16,399,647	27	4,386,143	68	32
Ada	1,323	11,477	28	153,031	29	71
Canyon	2,368	260,247	69	420,928	41	59
Owyhee	620	569,305	12	206,552	25	75
Idaho	25,349	11,497,383	22	5,688,765	41	59

Table Source: USDA National Agricultural Statistics Service 2009.

Table Abbreviations: % = percent

More than half the land (69%) in Canyon County, Idaho, is used for agriculture, compared to 22 percent statewide. In Ada and Owyhee counties, agricultural lands accounted for 28 percent and 12 percent of the total county's area, respectively. Average farm size ranged from 110 acres in Canyon County to 918 acres in Owyhee County, compared to a statewide average of 454 acres.

In 2007, the overall market value of agricultural products sold in the three Idaho counties in the project area ranged from about $153 million in Ada County to about $421 million in Canyon County. Livestock comprised the majority of the total value of agricultural products sold in all three counties and statewide, ranging from 59 percent of the total value to 75 percent, as shown in Figure 3-53.



***Source*: USDA National Agricultural Statistics Service 2009**

Figure 3-53. Total Market Value of Agricultural Products Sold, 2007

Timber

The total annual timber harvest in Oregon from 2003 to 2009 ranged from 2,748 million board feet (MMBF) in 2009 to 4,451 MMBF in 2004. Timber harvest in the six analysis area counties in Oregon accounted for 2.4 percent to 3.2 percent of the state total over this period, with total harvested volumes ranging from 88 MMBF in 2009 to 136 MMBF in 2005. There was no recorded timber harvest in Gilliam and Malheur counties in 2009. Timber harvest in 2011 is accounted for in Table 3-279.

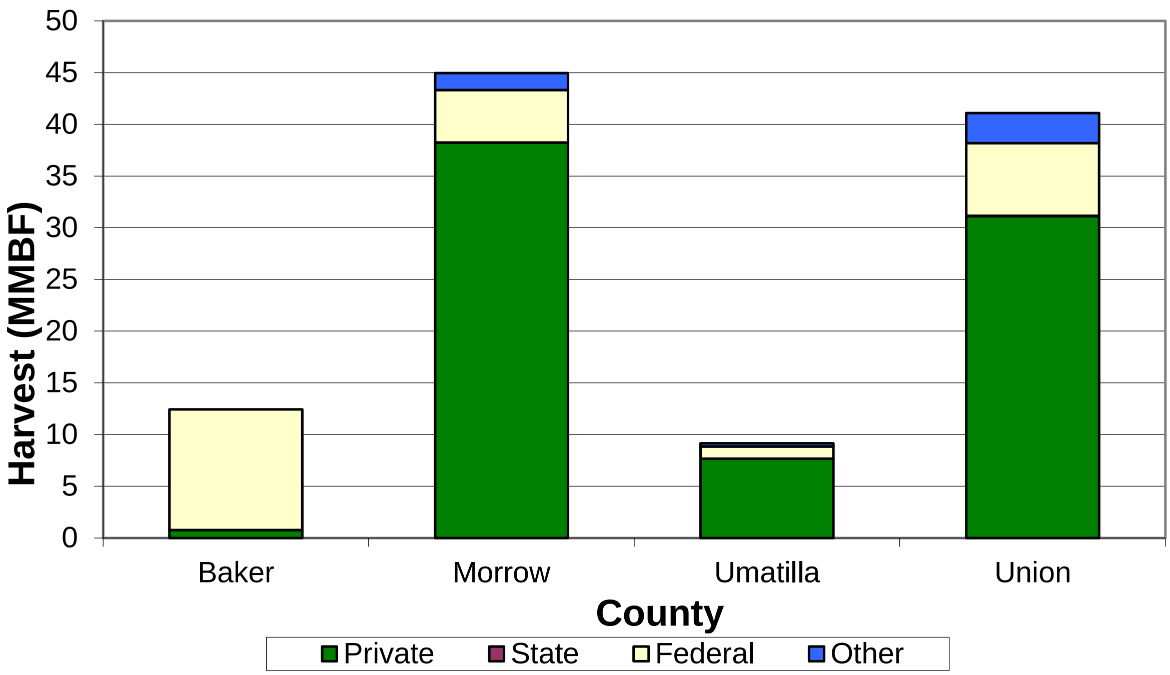
Table 3-279. Timber Harvest (MMBF) in Affected Oregon Counties, 2011

Geographic Area	Private	State	Federal	Other	Total
Baker	0.8	0.0	11.7	0.0	12.4
Gilliam	0.0	0.0	0.0	0.0	0.0
Malheur	0.0	0.0	0.0	0.0	0.0
Morrow	38.2	0.0	5.1	1.6	44.9
Umatilla	7.7	0.0	1.2	0.3	9.2
Union	31.1	0.0	7.0	2.9	41.1
Oregon	2,732.9	280.5	539.4	96.4	3,649.1

Table Source: Oregon Department of Forestry 2012.

Table Note: The land ownership categories identified in this table include the following Oregon Department of Forestry categories: Private = Forestry industry and other private lands; State = State; Federal = BLM and USFS lands; Other = Other public and Native American lands.

Private lands accounted for a majority (72%) of the timber volume harvested in the analysis area counties in 2009, with federal lands accounting for about 23 percent. Statewide, private lands accounted for 75 percent of the total harvested, federal lands comprising 15 percent, and with state lands comprising just 7 percent. Figure 3-54 shows the distribution of harvest volume by land ownership for the affected counties that had recorded harvest in 2009.



***Source*: Oregon Department of Forestry 2012**

Figure 3-54. Timber Harvest by Affected Oregon County and Land Ownership, 2009

Recreation and Tourism

Recreation and tourism is not classified or measured as a standard industrial category; therefore, employment and income data are not specifically collected for this sector. Components of recreation and tourism activities are instead captured in other industrial sectors, primarily the retail sales and services sectors. Estimates of travel-related spending and associated employment in Oregon for 2009 prepared for the Oregon Tourism Commission found that statewide travel-related employment accounted for about 4.2 percent of total employment (Table 3-280). In Umatilla and Baker counties, travel-related employment accounted for a larger share of total employment than the statewide average (5.4 percent and 7.9 percent). Travel-related employment in the other four analysis area counties in Oregon accounted for about the same or a smaller share than the statewide average. These estimates are primarily based on travel-related spending on accommodation, food and beverages, local transportation, recreation and entertainment, and shopping. While these estimates include business travel and recreation and tourism-related travel, they provide a useful indication of the relative importance of recreation and tourism to the local economies within the analysis area.

Table 3-280. Travel Related Economic Impacts in Oregon Counties, 2010

Geographic Area	Travel Spending ($M)	Travel-Related Earnings ($M)	Travel-Related Employment	Percent of Total Employment[1]
Baker	41.8	91.2	690	7.9
Gilliam[2]	9.0	2.3	110	7.0
Malheur	37.3	10.0	560	3.3
Morrow	12.2	2.9	160	2.7
Umatilla	131.7	36.6	2,060	5.4
Union	29.5	9.6	550	3.7
Oregon	8,500.0	2,200.0	92,400	4.2

Table Source: Dean Runyan Associates 2012.

Table Abbreviations: M = million.

Table Notes: [1] Travel-related employment is estimated as a percent of total employment using data from the U.S. Bureau of Economic Analysis 2012. [2] The total for Gilliam County also includes adjacent Sherman County.

The most recent comprehensive assessment of travel-related spending and associated employment in Idaho counties was prepared in 2004 (Global Insight and D.K. Shifflet & Associates 2005). This analysis found that statewide travel-related employment accounted for about 7 percent of total employment (Table 3-281). Travel-related employment accounted for a larger share of total employment than the statewide average in Ada County (9 percent versus 7 percent) and a smaller share than the state average in Canyon and Owyhee counties (4 percent and 1 percent, respectively).

Table 3-281. Travel-Related Economic Impacts by Idaho County, 2004

Geographic Area	Travel Spending ($M)	Travel-Related Earnings ($M)	Travel-Related Employment	Percent of Total Employment
Ada	1,128.9	277.0	17,951	9
Canyon	126.9	31.1	2,017	4

Geographic Area	Travel Spending ($M)	Travel-Related Earnings ($M)	Travel-Related Employment	Percent of Total Employment
Owyhee	1.8	0.4	28	1
Idaho	2,968.1	728.3	47,203	7

Table Source: Global Insight and D.K. Shifflet & Associates 2005.

Table Abbreviations: M = million.

Estimates of statewide travel-related impacts prepared by the U.S. Travel Association (2009), however, suggest that the 2004 estimates prepared by Global Insight and D.K. Shifflet (Global Insight) may overestimate the importance of travel-related employment in Idaho, at least at the state level. The U.S. Travel Association (2009) estimates found that travel-related employment accounted for 23,700 jobs in Idaho in 2004, about half the number estimated by Global Insight. The 2005 Global Insight estimates do, however, represent the best available data at the county level and provide an indication of the relative importance of recreation and tourism in the three analysis area counties in Idaho.

Designated recreation areas within 0.5 mile of the proposed B2H Project and alternatives are discussed in section 3.2.6 Land Use, Agriculture, Recreation, Transportation. These areas include the BLM-managed Virtue Flat Extensive Recreation Management Area (ERMA), the Owyhee River Below the Dam Special Recreation Management Area (SRMA), the Oregon Trail and Owyhee River Areas of Critical Environmental Concern (ACECs). Section 3.2.6 also discusses dispersed recreation activities, including hunting, off-highway vehicle (OHV) use, and camping that may occur within the analysis area.

Income and Poverty

Median household income was below the Oregon state median ($46,536) in all of the Oregon counties in the analysis area in 2010, ranging from 70 percent to 98 percent of the state median (Table 3-282). Four of the six Oregon counties had a larger percentage of their county populations below the poverty level than the state average (15.8 percent). Malheur County had the highest percentage (36.5 percent) of the population below the poverty level in 2010. The poverty thresholds for 2010 vary by size of family. The weighted average thresholds are $11,139 for one person and $14,218 for a family of two.

In Idaho, Ada County ($50,909) had a median household income above the Idaho state median ($43,259; while Canyon County ($42,419) and Owyhee County ($36,670) both had median household incomes below the Idaho state median. A larger percentage of Canyon County (19.7 percent) and Owyhee County's (22.7 percent) population was below the poverty level when compared with the Idaho state average (15.8 percent), while a smaller percentage of Ada County's (13.9 percent) was below the poverty level when compared to Idaho state as a whole.

Table 3-282. Income and Poverty, 2010

County/State	Median Household Income		Percent of Population Below the Poverty Level
	Dollars[1]	Percent of State Median[2]	
Baker	37,868	81	20
Gilliam	45,827	98	11.4

County/State	Median Household Income		Percent of Population Below the Poverty Level
	Dollars[1]	Percent of State Median[2]	
Malheur	32,412	70	39.5
Morrow	45,652	98	16.7
Umatilla	43,691	94	15.5
Union	41,192	89	16.7
Oregon	46,536	100	15.8
Ada	50,909	118	13.9
Canyon	42,419	98	19.7
Owyhee	36,670	85	22.7
Idaho	43,259	100	15.8

Table Source: U.S. Census Bureau 2012b

Table Notes: [1] Median incomes are presented in 2010 dollars unadjusted for inflation. [2] Presented as a share of the Oregon median for counties in Oregon and as a share of the Idaho median for counties in Idaho.

TRIBAL HOUSEHOLD ECONOMY

As a portion of the project area passes through lands ceded to the U.S. Government by 1855 treaty with Confederate Tribes of the Umatilla Indian Reservation (CTUIR), the BLM- as manager of these federal lands- has the legal responsibility to consult with CTUIR and consider the conditions necessary to satisfy the rights reserved by the Tribe as part of its Treaty. Exercise of treaty rights could include, but is not limited to, water rights, taking fish, mineral rights, collection of plant resources such as roots and berries, and hunting of small and large game for economic, religious, and cultural use. Treaty rights also include pasturing stock on open and unclaimed lands.

Although CTUIR is the only Tribe with ceded lands in the project area, several other Tribes consider portions of, or the entirety of, the project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. These Tribes include the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, the Burns Paiute Tribe, the Nez Perce Tribe, the Confederated Tribes of the Colville Reservation, and the Shoshone-Bannock Tribes of the Fort Hall Reservation.

There are currently no data available to estimate the percent contribution which fishing, hunting and gathering of wild plants provides to households of members of the abovementioned tribes. There are also no data to examine the percentage contribution of these activities at a community level.

PROPERTY VALUES

Approximately 71 percent of the land that would be crossed by the proposed B2H Project is privately owned. The BLM manages about 24 percent of the land that would be crossed, and the remaining 5 percent is managed by other federal (Department of Defense, USFS, and Bureau of Reclamation) or state agencies. The entire new construction portion of transmission line requires new rights-of-way that would involve a combination of right-of-way grants and easements between IPC and federal, state, and local governments; and private landowners. Rights-of-way for transmission line facilities on private lands would be obtained as perpetual easements by IPC.

COMMUNITY SERVICES

Local governments and other entities provide public services, such as solid-waste disposal, law enforcement, fire protection, health care, and education in the analysis area counties. Interviews were conducted with local authorities in each county to assess the availability of public services and infrastructure in the six counties that would be crossed by the proposed Project and alternatives. These interviews had two purposes: 1) identify the current capacities of different organizations to provide services, and 2) identify the ability of these service providers to meet the potential increase in demand associated with the proposed project.

SOLID-WASTE MANAGEMENT

Solid waste generated during construction would likely be disposed of at landfills located within or near the analysis area. Landfills located within or near the analysis area include those located in Morrow, Baker, and Malheur counties in Oregon and in Canyon and Payette counties in Idaho. These landfills are listed in Table 3-283, which also identifies the volume of waste each landfill currently receives (tons per day), as well as the amount of waste each landfill is permitted to receive (tons per day), where this information is available.

Table 3-283. Landfills within the Analysis Area

Facility Name	County	Current Volume of Waste Received (Tons/Day)	Current Volume of Waste Permitted to Receive (Tons/Day)
Finley Buttes Landfill	Morrow, OR	1,923 tons	No permitting restriction
Baker Sanitary Landfill	Baker, OR	50 to 60 tons	No permitting restriction
Lytle Boulevard Landfill	Malheur, OR	15,500 tons	20,000 tons
Pickles Butte Landfill	Canyon, ID	Unknown[1]	Unknown[1]
Clay Peak Landfill	Payette, ID	700 tons	No permitting restriction

Table Source: Freese 2011; Geedes 2011; Large 2011; Schmidt 2011.

Table Note: [1] Multiple attempts were made to contact Pickles Butte Landfill to obtain information about current and future operations. No response has been received to date.

LAW ENFORCEMENT

The proposed B2H Project and alternatives would cross through the jurisdiction of six county sheriff's departments (Table 3-284). Four of these sheriff's departments responded to requests for information (Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011).

Response times from local stations to the B2H Project area would vary and depend on the time of day, the priority of the emergency, environmental conditions, the location of the emergency, and whether law enforcement personnel were already patrolling the area. Estimated response times would range from 5 minutes to 1 hour for the Baker, Malheur, and Owyhee County sheriffs' departments (Bentz 2011; Hoagland 2011; Southwick 2011). The Umatilla County Sheriff's Department indicated that response times for non-emergency calls during the day could take several hours and that non-emergency calls at night would not likely be responded to until the next day. Response times for emergency calls (i.e., life-threatening situations) by the Umatilla County Sheriff's Department would likely range from 20 minutes to 1 hour (Diehl 2011).

Table 3-284. Law Enforcement

Department	Number of Law Enforcement Personal	Response Time to Project Area
Morrow County Sheriff	Unknown[1]	Unknown[1]
Umatilla County Sheriff	7 deputies (3 within the project area)	20 minutes to next day
Union County Sheriff	Unknown[1]	Unknown[1]
Baker County Sheriff	8 deputies	5 minutes to 1 hour
Malheur County Sheriff	18 deputies	1 hour
Owyhee County Sheriff	13 deputies	20 minutes

Table Sources: Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011.

Table Note: [1] The Morrow County and Union County Sheriff's offices did not respond to several requests for information.

Fire Protection and Emergency Response

The proposed Project and alternatives would cross through the jurisdiction of 13 fire departments (Table 3-285). These departments were initially identified by contacting offices with jurisdiction over the counties crossed by the proposed Project. In addition, the Oregon State Fire Marshal's office was contacted to confirm that the departments shown in Table 3-285 covered the entire Project area (Warner 2011). Each fire department was contacted and 10 of the 13 fire departments and 1 federal fire office responded to requests for information (Carter 2011; Enright 2011; Harper 2011; Johnson 2011; Martin 2011; Morgan 2011; Payton 2011; Rogelstad 2011; Skerjanec 2011; Webb 2011; Wooldridge 2011).

Table 3-285. Fire Departments

Department	County	Number of Fire Fighters	Equipment	Response Time
Boardman Rural Fire Protection District	Morrow	7 paid; 17 volunteers	(3) type 1 interface engines (off-road) (2) type 1 engines (1) type 1 tender with a 3,000-gallon tank (1) type 6 engine	0.5 hour south-route; 10 minutes north-route.
Ione Rural Fire Protection District	Morrow	14–15 volunteers	(2) pumper engines (2,000- and 1,000-gallon tanks) (3) brush trucks (1) tender with a 3,000-gallon tank	Unknown[1]
Echo Rural Fire Department	Umatilla	20–21 volunteers	(5) brush rigs (3) tankers (4) pumpers	20–25 minutes near Pilot Rock; 40 minutes in other areas

Department	County	Number of Fire Fighters	Equipment	Response Time
Pilot Rock Rural Fire Protection District	Umatilla	Unknown[1]	Unknown[1]	Unknown[1]
North Powder Fire Department	Union	16 volunteers	(1) type 6 brush rig (1) 2,500 gallon tender (1) 1,800 gallon tender (1) 1,500 gallon tender	12–15 minutes
La Grande Rural Fire Protection District	Union	1 paid; 20 volunteers	(3) type 1 engines (1) brush truck (1) 3,000-gallon water tender (2) rescue vehicles	10 minutes
Union Emergency Services-Fire Department	Union	15 volunteers	(2) ambulances (1) rescue rig (4) fire engines (2) tankers (1) brush truck	11–12 minutes
Wallowa-Whitman National Forest Fire Management Office	Union	Unknown[1]	Unknown[1]	Unknown[1]
Keating Rural Fire District	Baker	15 volunteers	(2) structure engines (1) tender (4) wildland engines	25 minutes
Diamond Rural Fire Protection District	Baker	Unknown[1]	Unknown[1]	Unknown[1]
Baker Rural Fire Protection District	Baker	18 volunteers	(3) structure trucks (2) 4,200-gallon tenders (4) brush trucks	8–14 minutes
BLM Vale District Fire, Oregon		34 permanent seasonal personnel; 60 temporary personnel	(11) heavy engines (8) light engines (1) tactical tender (1) dozer (1) single engine air tanker (July – September) (1) type 2 helicopter (July – September)	Varies with distance
Adrian Rural Fire Protection District	Malheur	14 volunteers	(1) 1,000-gallon pumper engine (1) 3,000-gallon tender truck (1) heavy truck with an 800-gallon tank (1) light truck with a 300-gallon tank	20–25 minutes
Homedale Fire Department	Owyhee	Unknown[1]	Unknown[1]	Unknown[1]

Department	County	Number of Fire Fighters	Equipment	Response Time
Marsing Rural Fire Department	Owyhee	32 volunteers	(2) engines (2) brush trucks (4) tenders	15 minutes
BLM Fire Management Officer	Project Wide	N/A	N/A	N/A

Table Sources: Carter 2011; Enright 2011; Harper 2011; Johnson 2011; Martin 2011; Morgan 2011; Payton 2011; Rogelstad 2011; Skerjanec 2011; Webb 2011; Wooldridge 2011.

Table Abbreviations: N/A = Not applicable.

Table Note: [1] Multiple attempts were made to contact the Ione Rural Fire Protection District, the Pilot Rock Rural Fire Protection District, the Wallowa-Whitman National Forest Fire Management Office, and the Homedale Fire Department to obtain information about current operations. No responses were received.

Not all lands fall within a designated fire district. In these cases, the closest or best-situated fire district would likely respond (Enright 2011; Wooldridge 2011). Mutual-aid agreements have been established between local fire districts for mutual response to ensure cooperation pool resources, ensure cooperation, and (Payton 2011; Martin 2011; Webb 2011). As a result of these mutual-aid agreements, the fire district that responds to fires may not be the district the fire occurs in or even the closest district, but rather the district best situated and suited to respond.

Response times to a fire along the B2H Project would vary. Most of the fire districts in the analysis area are comprised of volunteers and, in some cases, it could take time to collect and mobilize an entire fire crew. In addition, most of the B2H Project crosses open remote lands where access is often limited. Were a fire to occur in one of these areas, it might not be immediately identified.

HEALTH CARE

A number of medical facilities serve the communities and outlying areas in the vicinity of the B2H Project. If minor project-related injuries occurred, they would be treated at local medical facilities or emergency rooms. Workers suffering more serious injuries would be taken to one of the major hospitals in the general project vicinity. Four major hospitals capable of treating serious injuries are located within the counties of the proposed project: Saint Anthony Hospital in Pendleton, Oregon, Grande Ronde Hospital in La Grande, Oregon, Saint Alphonsus Regional Medical Center in Ontario, Oregon and another Saint Alphonsus level four hospital in Baker City with life flight services.

Saint Anthony Hospital is a level 3 hospital licensed for 49 beds, 5 of which are intensive-care beds. The hospital employs about 80 nurses, and 30 physicians have staffing privileges. Medical transportation is provided by Life Flight. A Life Flight helicopter is stationed at the hospital and the hospital also has access to a fixed-wing craft. Flight times between the hospital and the project area would take about 15 minutes for the portions of the Proposed Action route and alternatives located near Pilot Rock and 40 minutes for the areas located further east. Patients suffering major injuries, such as severed limbs or electrical burns, would be stabilized at Saint Anthony Hospital and then transported to a regional hospital for treatment (Blanc 2011).

Grande Ronde Hospital is a level 4 hospital licensed for 25 beds, 6 of which are intensive-care beds. The hospital employs about 175 nurses, and 45 physicians have staffing privileges. Medical transportation is provided by Airlink. An Airlink fixed-wing craft is stationed at the local airport, and flight times between the airport and the Proposed Action and alternatives would likely be about 20 to 90 minutes. Patients suffering major injuries, such as severed limbs or electrical burns, would be stabilized at Grande Ronde Hospital and then transported to a regional hospital for treatment (McCowan 2011).

Saint Alphonsus Regional Medical Center in Boise, Idaho, is a level 2 hospital licensed for 387 beds, 20 of which are intensive-care beds. The hospital employs about 665 nurses, and 613 physicians have staffing privileges. Medical transportation is provided by Air Medical. An Air Medical helicopter is stationed at the Boise International Airport, and flight times been the hospital and the Proposed Action and alternatives will likely be about 15 minutes. This medical facility will be able to treat any injury that could occur during construction or operation of the project, with the exception of major burns; patients suffering major burns will be stabilized at this center and then sent to a burn center in Salt Lake City, Utah, or Portland, Oregon (Ryan 2012).

Schools

The Proposed Action and alternatives would cross six counties and multiple school districts. The school districts most likely to be affected are identified by county in Table 3-286, which also identifies current student enrollment and student/teacher ratios, as well as enrollment trends for the 10 school districts that responded to requests for information. All 10 of these districts indicated that enrollment has either been flat or declining in recent years, with current trends expected to continue in the future. Student/teacher ratios for the 2010/2011 school year ranged from 7.2 students per teacher in the Huntington School District 16J to 21 students per teacher in the La Grande School District 001.

Table 3-286. School Districts

Area	School District	Student Enrollment (2010-2011)	Student: Teacher Ratio (2010-2011)	Enrollment Trends
Baker (Oregon)	Baker School District	2,000	19.6	flat to declining
Baker (Oregon)	Huntington School District 16J	71	7.2	declining
Malheur (Oregon)	Ontario School District 8C	2,400	18.0	flat
Malheur (Oregon)	Vale School District 084	878	16.0	declining
Malheur (Oregon)	Nyssa School District 026[1]	1,130	17.0	unknown
Malheur (Oregon)	Adrian School District 061	242	13.6	flat
Morrow (Oregon)	Morrow School District 001	2,200	16.8	flat
Umatilla (Oregon)	Pilot Rock School District 002	352	14.6	declining
Union (Oregon)	La Grande School District 001	2,204	21.0	declining
Union (Oregon)	Union School District 005	370	16.1	declining
Owyhee (Idaho)	Marsing Joint School District 363	850	12.6	flat

Area	School District	Student Enrollment (2010-2011)	Student: Teacher Ratio (2010-2011)	Enrollment Trends
Owyhee (Idaho)	Melba Joint School District 136	740	17.3	flat

Table Sources: Allison 2011; Burrows 2011; Hogg 2011; Lowry 2011; Milburn 2011; Nunn 2011; Panike 2011; Stalk 2011; Wegener 2011; Wood 2011.

Table Abbreviations: N/A = not available

TAX REVENUES

OREGON

Property taxes are an important source of revenue for the public sector in Oregon (Oregon Department of Revenue 2011a). Property taxes are based on the assessed value of the property. In Oregon, the appropriate county assessor administers most property assessments, but the Oregon Department of Revenue assesses the value of some properties, including public utilities and large industrial properties.

Property taxes imposed for fiscal year 2011/2012 are presented for the State of Oregon and the analysis area counties in Oregon in Table 3-287. This table also presents the net assessed value and average tax rates. Total property taxes imposed ranged from approximately $1,007,455 in Gilliam County to about $72,730 in Umatilla County.

The State of Oregon does not have sales tax but does impose a statewide transient lodging tax of 1 percent. The majority of the revenue generated from this tax (80 percent) is used to fund state tourism marketing programs, with up to 15 percent used to implement regional tourism marketing programs. Lodging tax revenues generated in the affected counties in 2009 ranged from $18,315 in Gilliam and Sherman counties (which are combined to avoid disclosure due to the small number of providers) to $177,004 in Umatilla County (Oregon Department of Revenue 2010a).

Table 3-287. Property Tax Revenue in Oregon Counties, 2011-2012

Area	Net Assessed Value ($,1000)	Property Tax Imposed ($1,000)
Baker	1,207,339	16,235
Gilliam	1,007,455	11,826
Malheur	1,638,499	22,546
Morrow	1,423,030	22,980
Umatilla	4,476,221	72,730
Union	1,480,818	19,235
Oregon	312,702,119	4,924,270

Table Source: Oregon Department of Revenue 2012a.

Corporations doing business in Oregon pay a corporate excise tax. Net corporate tax receipts in Oregon were $476.5 million in fiscal year 2010-11 (Oregon Department of Revenue 2011b). For tax years 2011 and 2012, corporations pay a tax rate of 6.6 percent on income up to $250,000 and a rate of 7.6 percent for any amount greater than $250,000. Viewed by industry sector, utilities accounted for

$1.6 million of corporate tax receipts in fiscal year 2010-11, less than 1 percent of the total for that year. Corporate tax revenues contribute to the General Fund, which is used to support state services including schools and education, human services, public safety, and other programs.

Personal income tax is Oregon's largest source of revenue, expected to account for 87 percent of the General Fund for 2011-13 (Oregon Department of Revenue 2012b). Taxable income and net income tax revenues are presented for the State of Oregon and the analysis area counties in Oregon in Table 3-288. Income tax revenues generated in the affected counties in 2010 ranged from $2.3 million in Gilliam County to $63.8 million in Umatilla County.

Table 3-288. Income Tax Revenues in Oregon Counties, 2010

Geographic Area	Taxable Income ($1,000)	Net Income Tax ($1,000)
Baker	180,287	11,926
Gilliam	30,813	2,338
Malheur	276,697	16,941
Morrow	142,844	9,681
Umatilla	926,300	63,803
Union	334,634	23,247
Oregon	67,359,660	4,999,374

IDAHO

Property taxes in Idaho are based on a property's current market value, and most homes, farms, and businesses are subject to property tax. Property tax values for operating property, including industries engaged in electric generation, transmission, and distribution, are set by the Idaho State Tax Commission. The Idaho State Tax Commission appraises operating property using a unit-appraisal approach, which values a group of property items as one entity. The market value of each unit is estimated using cost, income, and/or market approaches to valuation (Idaho State Tax Commission 2003). Property tax revenues for 2011 are summarized for Idaho counties in the broader analysis area in Table 3-289. Total property taxes imposed ranged from $402 million in Owyhee County to $23 million in Ada County.

Table 3-289. Property Tax Revenues in Idaho Counties, Fiscal Year 2011

County	Real and Personal Property Assessed Value ($1,000)[1]	Operating Property Assessed Value ($1,000)[1][2]	Total Assessed Value ($1,000)	2011 Property Tax Revenue ($1,000)[3]
Ada	23,814,462	692,004	24,566,467	391,693
Canyon	6,614,288	214,417	6,840,706	138,820
Owyhee	402,933	103,140	507,439	5,001
Idaho	101,365,623	4,822,889	106,659,746	1,380,558

Table Source: Idaho State Tax Commission 2012a.

Table Notes: [1] Real and personal property includes residential, industrial, and commercial property and farms, timber, and mining. [2] Operating property includes industries engaged in electric generation, transmission, and distribution. [3] Property tax rates vary by and within each county. The total property tax revenues shown here are for all taxing districts within each county, including towns, cities, and special taxing districts.

The sales and use tax rate in Idaho is 6 percent. Sales tax is levied on goods and services purchased within the state. Use tax is imposed on goods purchased tax-free outside Idaho for consumption, use, or storage in Idaho. Use tax is paid directly to the state rather than to the seller of the good. The state also applies a travel and convention tax of 2 percent on hotel/motel occupants and campground users (Idaho State Tax Commission 2012b). Long-term, temporary residents (more than 30 days) are exempt from the travel and convention tax. Sales, use, and travel and convention tax revenues are summarized for Fiscal Year 2011 by affected Idaho counties in Table 3-290. Total revenues ranged from about $1.5 million in Owyhee County to $258.9 million in Ada County.

Individual income tax generated $1.45 billion in revenues in Idaho in fiscal year 2011 (Idaho State Tax Commission 2012c). Data on income tax revenues by county are not readily available for Idaho (Pack 2012). The corporate tax rate in Idaho is 7.6 percent. Corporate income tax generated $22.6 million in revenues in Idaho in fiscal year 2011 (Idaho State Tax Commission 2012c).

Table 3-290. Sales, Use, and Travel and Convention Tax Revenues in Idaho Counties, Fiscal Year 2011 ($1,000)

Area	Sales and Use Tax ($1,000)	Travel and Convention Tax ($1,000)	Total ($1,000)
Ada	258,909.9	1,805.49	260,715.3
Canyon	41,564.5	211.82	41,776.3
Owyhee	1,568.2	2.55	1,570.8

Table Source: Idaho State Tax Commission 2012b.

Table General Note: Tax revenues are shown in thousands of dollars.

NONMARKET VALUES

Nonmarket values reflect the benefits individuals attribute to experiences of the environment, uses of natural resources, or the existence of particular ecological conditions that do not involve market transactions, and therefore lack prices. Nonmarket values are not limited to the natural environment and apply to visual resources and archaeological sites.

This socioeconomic analysis does not account for non-market benefits or other values, benefits, and costs that are not easily quantifiable. This is not to imply that such values are not significant or important, but to recognize that non-market values are difficult to represent by appropriate dollar figures.

Although the BLM and Forest Service have been exploring the use of ecosystem services concepts to describe the benefits provided by forests and other public lands, this type of approach has not been applied operationally in a management context (Kline 2006; Smith et al. 2011).The effects of the action alternatives on these types of services are assessed in the sections of this EIS that address wildlife, fish, vegetation, water resources, cultural resources, and visual resources, among others. Monetary values are not assigned to these services, but this does not lessen their importance in the decision-making process. Decision-makers will consider the economic values presented in this section within the context of the information presented elsewhere in this document, much of which cannot readily be translated into economic terms.

3.2.11.6 Environmental Consequences

The B2H Project is expected to affect social and economic conditions in all counties in the analysis area. Specifically, the B2H Project is likely to affect population, housing, economy and employment, other economic sectors, tax revenues, and environmental justice communities. The following sections discuss how the construction and operations of the Proposed Action and alternatives would affect social economics and environmental justice communities. Effects are reported for the B2H Project as a whole, rather than by Project Segment.

No Action Alternative

Selection of the No Action Alternative would result in no socioeconomic effects, either positive or negative, as a result of the B2H Project. The No Action Alternative would also not have any effects on minority or low-income residents of the project area.

Effects Common to All Alternatives

This section addresses the socioeconomic and environmental justice impacts common to the Proposed Action and all alternatives during construction and operation activities for the B2H Project.

Population

Construction

Estimated construction workforce requirements are summarized by construction spread and month in Figure 3-55, Figure 3-56, and Figure 3-57. Figure 3-55 shows the total estimated construction employment by month for each construction spread. These estimates were developed by IPC's transmission engineering contractor based on average crew sizes and production rates by job type. Figure 3-56 and Figure 3-57 show total estimated construction employment by month and job type for spreads 1 and 2 respectively. Overall, project construction is expected to require 24-30 months. These estimates are for the 500-kV transmission line component of the B2H Project and do not include estimated monthly employment for the 138/69-kV rebuild or construction of the proposed Grassland Substation or modifications to the Hemingway Substation.

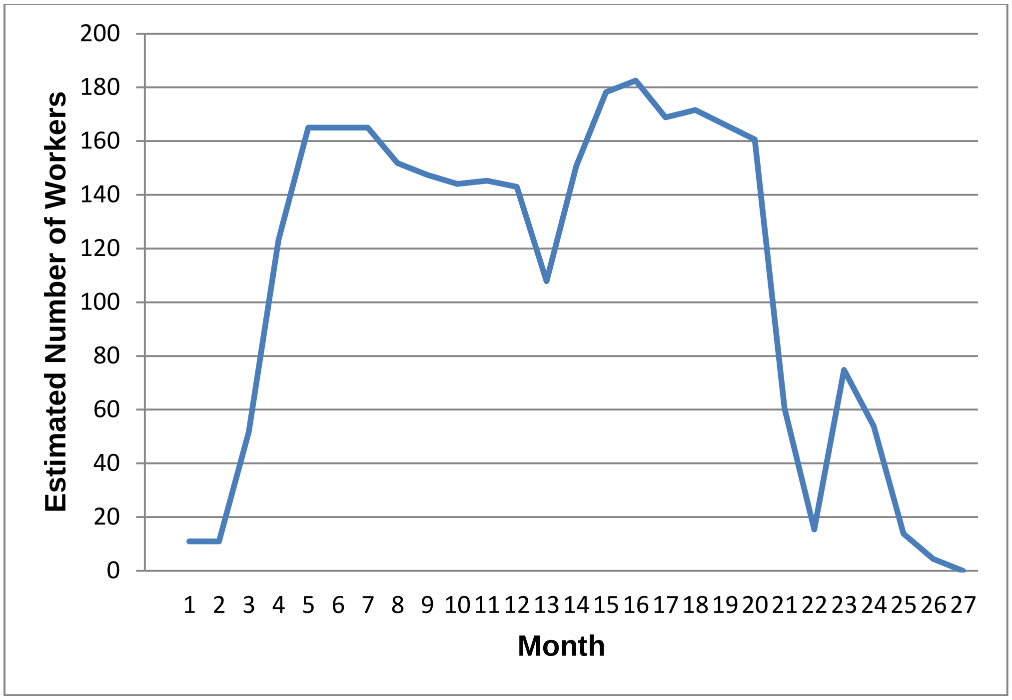


Figure 3-55. Estimated Number of Construction Workers by Month per Construction Spread

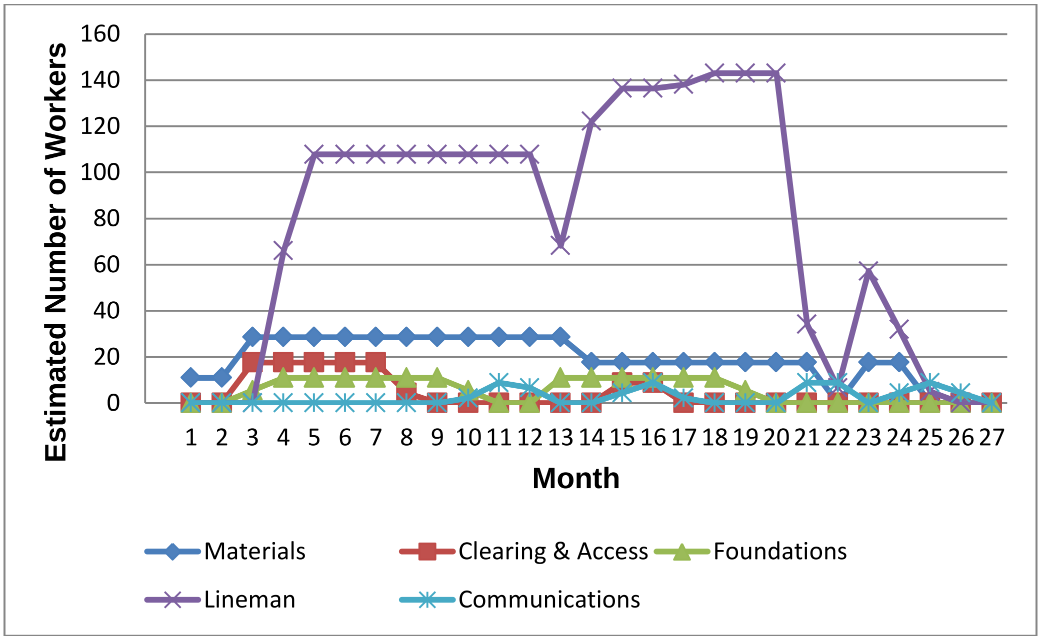


Figure 3-56. Estimated Number of Construction Workers by Month and Job Type – Construction Spread 1

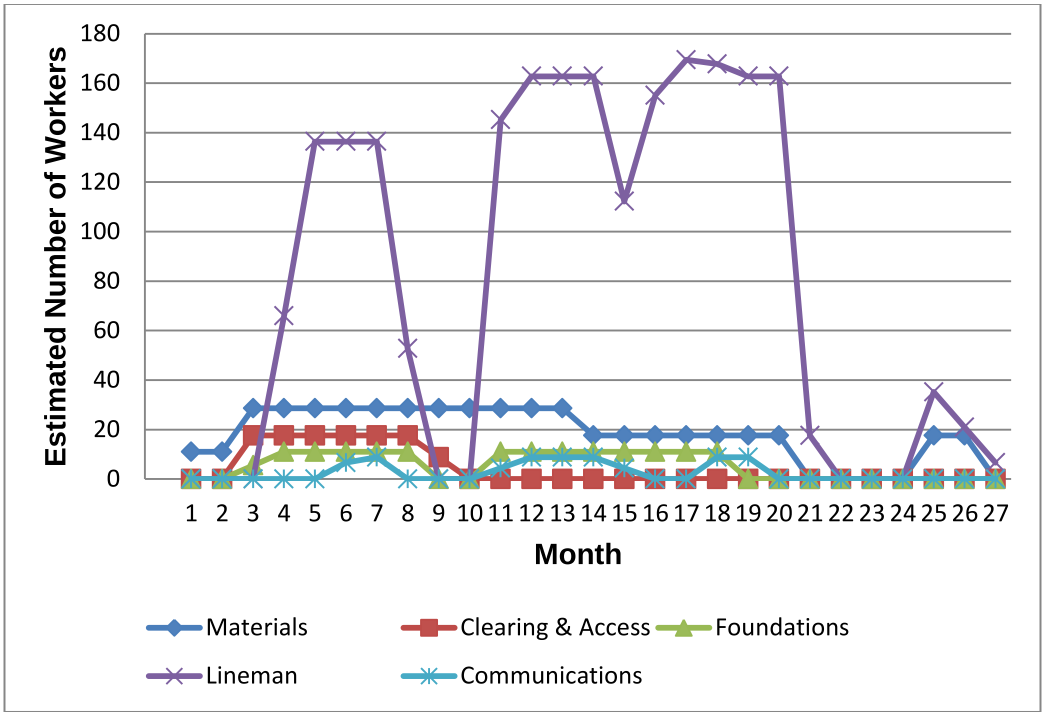


Figure 3-57. Estimated Number of Construction Workers by Month and Job Type – Construction Spread 2

The proposed 138/69-kV rebuild is expected to take approximately 21 weeks, with the estimated labor force expected to peak at 20. Construction of the proposed Grassland Substation is expected to take approximately 9 months, with the estimated labor force expected to peak at 60. The proposed modifications to the Hemingway Substation are expected to take approximately 4 months, with the estimated labor force expected to peak at 40. Construction employment for both substations will follow an evenly distributed bell-shaped pattern. The projected workers and population change estimates assume that both substation construction projects will occur in 2015 and labor demands will peak at the same time as the labor demands for the corresponding transmission line construction spread.

Projected employment and potential population changes are presented for the peak construction period by construction spread in Table 3-291. For analysis purposes, 10 percent of relocating workers are assumed to be accompanied by their families, including school-age children. Based on data compiled by the U.S. Census Bureau (2009a) as part of the 2008 American Community Survey, the average relocating family is assumed to consist of 2 adults and 1 school-age child.

Table 3-291. Projected Workers and Population Change During Peak Construction

Workers	Construction Spread [1], [2]	
	1st Segment	2nd Segment
Permanent workers likely to commute to Site Daily [3]	61	63
Temporary workers likely to move to the analysis area alone [4]	164	169
Temporary workers likely to move to analysis area with family [4]	18	19

Workers	Construction Spread [1], [2]	
	1st Segment	2nd Segment
Total	243	251
Population		
2010 population (analysis area) [5]	128,944	58,973
Number of people temporarily relocating [6]	219	226
As a percent of the 2010 population	0.2	0.4

Table Source: US Census Bureau 2010a, Population Estimates Program, 2010 Population Estimates.

Table Notes: [1] Estimates for construction spread 1 assume the labor demands for this portion of the transmission line and the proposed Grassland Substation would peak at the same time. The transmission line labor force is estimated to peak at 183 workers; the substation labor force is expected to peak at 60 workers. [2] Estimates for construction spread 2 assume the labor demands for this portion of the transmission line and modifications to the Hemingway Substation would peak at the same time. The transmission line labor force is estimated to peak at 211 workers; the substation labor force is expected to peak at 40 workers. [3] 25 percent of the average and peak workforce is expected to commute to and from the job site each day. [4] 75 percent of the average and peak workforce is expected to temporarily relocate to the project area. Ten percent of workers temporarily relocating are assumed to be accompanied by their families for the purposes of this analysis. [5] Population data are from the 2010 census. Total population for construction spread 1 is for Morrow, Umatilla, Union, and Baker counties. Total population for construction spread 2 is for Baker, Malheur, and Owyhee counties. [6] The number of people temporarily relocating assumes that 75 percent of the projected peak construction workforce would temporarily relocate to the project area, with 10 percent of that total accompanied by their families (assuming an average family size of 2 adults and 1 child) (U.S. Census Bureau 2009a).

The effects analysis assumes that approximately 25 percent of the projected peak construction workforce would be hired locally (i.e., normally reside within commuting distance of the job sites) and would likely commute to and from their homes to work each day. The remaining 75 percent of the workforce would either temporarily relocate to the primary analysis area counties or commute in from their permanent residences on Sunday nights and stay in overnight lodging on weekdays, returning home on Fridays.

Less than 10 percent of the workers temporarily relocating would be expected to be accompanied by their families. Some workers like the construction foremen and inspectors would stay the length of the project, but many workers would be employed for just 4 to 6 months. In addition, workers employed on linear projects of this sort tend to relocate along the line as necessary, staying in each location for a fairly short period of time. For these reasons, workers on these types of projects do not typically bring children. However, some may bring significant others if they do not have any dependents.

The maximum projected temporary peak increase in employment associated with construction spread 1 and the construction of the proposed Grassland Substation would be equivalent to approximately 0.2 percent of the total 2010 population in Morrow, Umatilla, Union, and Baker counties. The maximum projected temporary peak increase in employment associated with construction spread 2 and modifications to the Hemingway Substation would be equivalent to about 0.4 percent of the total 2010 population in Baker, Malheur, and Owyhee counties. Very few, if any, of the workers employed during the construction phase of the B2H Project would be expected to permanently relocate to the area. Therefore, B2H Project related anticipated increases in population would be temporary and inconsequential.

Operations

Existing IPC staff would be responsible primarily for the operations and maintenance (O&M) of the new transmission line and associated facilities. One additional part-time position may be filled locally. No existing employees would be required to relocate to the B2H Project area.

HOUSING

Construction

Assuming that approximately 75 percent of the peak construction workforce would temporarily relocate to the analysis area, this suggests that up to 182 workers could temporarily relocate to the northwest (construction spread 1) and 188 workers to the southeast (construction spread 2) parts of the primary socioeconomic analysis area. An estimated 10 percent of these workers are assumed to be accompanied by their families.

Based on past experience with similar projects, IPC's transmission engineering contractor estimates that approximately 35 percent of non-local workers would provide their own housing in the form of RVs or pop-up trailers. The remaining non-local workers would be expected to require rental housing (apartments/houses) (25%), mobile homes (5%), and motel or hotel rooms (35%). Construction workers, particularly those working in less populated areas, often commute relatively long distances to the job site, with commutes of up to 90 minutes each way.

Existing housing resources, rental housing, hotels and motels, and RV spaces tend to be concentrated in and around the larger communities in the analysis area. Workers temporarily relocating to the area would generally be expected to reside in or near larger communities where these housing options and services are more available. Review of the rental-housing units and hotel and motel rooms that would normally be vacant and available for rent suggests there would be sufficient housing resources available for rent in the 2 groups of counties that would be crossed by each construction spread.

Rental-housing resources in the counties crossed by construction spread 1 (Morrow, Umatilla, Union, and Baker counties) include approximately 18,000 rental units, with about 1,200 of these units vacant as of 2010. Hotel and motel resources in these counties include approximately 2,600 rooms, with nearly 1,000 of these rooms vacant and available for rent as of 2010. Additional resources are available in the Tri-Cities of Richland, Kennewick, and Pasco, Washington, which are located about an hour drive north of Boardman, Oregon.

Rental-housing resources in the counties crossed by construction spread 2 (Baker, Malheur, and Owyhee counties) include approximately 8,000 units (Baker County units also included in spread 1) with about 600 of these units vacant as of 2012. Hotel and motel resources in these counties include at approximately 1,200 rooms, with approximately 460 of these rooms vacant and available for rent as of 2012. Additional resources are available in the cities of Boise and Nampa, which are in neighboring Ada and Canyon counties.

The demand for temporary house of construction workers does not exceed the supply of local housing and lodging. Therefore, housing effects due to the construction of the B2H Project would be low.

Operations

Existing IPC staff would be responsible primarily for the operations and maintenance of the new transmission line and associated facilities. One additional part-time position may be filled locally. No existing employees would be required to relocate to the analysis area, so housing effects of B2H Project operations would be low.

Economy and Employment

Construction

Economy

The proposed B2H Project would have a positive direct impact on the regional economy during construction through the local procurement of materials and equipment, the employment of local residents, and the expenditures by construction workers temporarily relocating to the area. These direct impacts would also generate economic activity in other parts of the economy through what is known as the multiplier effect, as initial changes in demand “ripple” through the local economy and generate indirect and induced impacts. Indirect impacts would consist of spending on goods and services by industries that produce the items purchased as part of the B2H Project. Induced impacts would include expenditures made by the households of workers involved either directly or indirectly in the construction process. The following analysis uses the IMPLAN model to assess total (direct, indirect, and induced) economic impacts in the socioeconomic analysis area.

The IMPLAN model divides the economy into 440 sectors including government, households, farms, and various industries, and models the linkages between the various sectors. The linkages are modeled through input-output tables that account for all dollar flows between different sectors of the economy. Using national industry and county-level economic data derived from the U.S. Bureau of Economic Analysis, U.S. Census, and other government sources, IMPLAN models how spending in one sector of the economy is spent and re-spent in other sectors of the economy. By tracing these linkages, the model approximates the flows of initial project spending and employment through the local economy based on the supply lines connecting the various economic sectors. The amount spent locally decreases with each successive transaction away from the initial expenditure due to the effects of savings, taxes, or other activities that happen outside the local economy, known as leakages.

A multi-county, IMPLAN model was developed that consists of the counties that comprise the socioeconomic analysis area, defined for this analysis as the counties crossed by the proposed B2H Project and alternatives (Baker, Malheur, Morrow, Umatilla, and Union counties, Oregon, and Owyhee County, Idaho), and Gilliam County, Oregon, and Canyon and Ada counties, Idaho. Impacts were assessed in terms of employment and labor income. Employment is measured as the average number of employees, both payroll and self-employed, engaged in full- or part-time work by the affected industries. Labor income is the sum of employee compensation (wages, salaries, and benefits paid to the employee and employer-paid payroll taxes) and proprietor income (earnings received by self-employed workers). Estimated impacts are presented by year because IMPLAN is a short-term model that measures annual impacts.

The total construction cost for the transmission line portion of the B2H Project would be expected to be approximately $513 million. These costs were developed for the Proposed Project and include the costs for both 500-kV construction spreads and the proposed 138/69-kV rebuild. This total includes the cost for materials, labor, and equipment, and miscellaneous costs, including general conditions, contractor mobilization/demobilization, project engineering, and construction management. The costs of right-of-way acquisition, permitting, financing, and IPC general and administrative expenses are not included in this estimate. Construction costs for the proposed Grassland Substation and improvements to the Hemingway Substation are estimated to be $30.6 million and $26.1 million, respectively.

The materials required to build the B2H Project would be specialized, and the main Project components, including the transmission structures, conductor, and assemblies, would be purchased outside the socioeconomic analysis area. Local purchases would likely include structure foundation materials, fuel for vehicles and equipment, some equipment rentals, staging-area rentals, and other incidental materials and supplies estimated to total approximately $45 million for the transmission line. Corresponding local purchases for the substation projects would be expected to be approximately $2 million. Estimated local expenditures were allocated by year based on the expected distribution of construction employment.

Spending by construction workers would also support and generate economic activity in the socioeconomic analysis area. Approximately 25 percent of the construction workforce would be expected to reside within commuting distance of the B2H Project (i.e., within the socioeconomic analysis area). The impacts of spending by these resident construction workers were estimated using average household consumption patterns for the analysis area. The remaining 75 percent of the workforce would be expected to temporarily relocate to the analysis area for the duration of their employment. Spending by non-resident construction workers was assumed to be limited to per diem spending, with average daily per diem spending estimated to be equivalent to the prevailing federal per diem rates for the analysis area. Non-resident spending was assumed to be primarily for lodging, food, and gas.

Employment

Construction employment would generally follow a bell-shaped pattern, peaking at up to 243 workers in the northwest part of the analysis area (Morrow, Umatilla, Union, and Baker counties), and up to 251 workers in the southeast part (Baker, Malheur, and Owyhee counties). These patterns are shown for the transmission line portion of the B2H Project by construction spread in Figure 3-56 and Figure 3-57. Substation employment would occur over a shorter period and follow a more evenly distributed bell-shape than the transmission portions. Estimated direct construction employment is presented by year in Table 3-292. Direct employment is presented in “annualized” job-years or full-time equivalents. Annualized jobs are employment estimates adjusted to be based on a full year even though they may consist of more than one worker employed for shorter periods of time. The direct annualized jobs presented in Table 3-292 were developed based on the weekly and monthly employment estimates.

Table 3-292. Estimated Construction Employment Impacts

Type/Level of Impact	Year 1	Year 2	Year 3	Total
Direct	161	353	22	536
Indirect	222	468	30	720
Induced	100	210	13	323
Total	483	1,032	65	1,580

Construction of the B2H Project would directly employ the full-year (annualized) equivalent of 536 workers for the duration of the construction activities, with two-thirds (66 percent) of this total (353 jobs) expected to be employed in year 2. Approximately 25 percent of these jobs would be expected to be filled by workers who normally reside within the socioeconomic analysis area, with the remaining 75 percent expected to be filled from workers temporarily relocating to the B2H Project area. Construction would also support an estimated total of 720 indirect and 323 induced jobs in the socioeconomic analysis area for the duration of the construction phase of the B2H Project. This employment would occur elsewhere in the local economy as a result of local project-related purchases and spending by construction workers. Indirect and induced employment estimates include both full- and part-time work.

Labor Income

Estimated direct labor income is presented by year in Table 3-293. Labor income is the sum of employee compensation and proprietor income. The employee compensation component includes wages, salaries, and benefits paid to the employee and employer-paid payroll taxes. Proprietor income represents earnings received by self-employed workers. The direct labor income estimates presented in Table 3-293 also include per diem payments.

Table 3-293. Estimated Construction Labor Income Impacts

Type/Level of Impact[1]	Year 1	Year 2	Year 3	Total
Direct	$22.3	$47.3	$3.0	$72.6
Indirect	$12.5	$26.6	$1.7	$40.7
Induced	$4.5	$9.5	$0.6	$14.5
Total	$39.2	$83.3	$5.3	$127.8

Table Note: [1] Impacts are presented in millions of dollars; all impacts are expressed in 2012 dollars.

Direct labor income is estimated to total $72.6 million for the duration of B2H Project construction, with approximately 25 percent of this total associated with local workers. Construction would also support an estimated $40.7 million of indirect labor income and $14.5 million of induced labor income. This labor income would occur elsewhere in the local economy as a result of local project-related purchases and spending by construction workers. Indirect and induced employment estimates include both full- and part-time work.

Operations

Operation of the project would generate economic activity in the analysis area in the form of operations and management related expenditures on materials and supplies. These impacts are expected to be small (less than $1 million annually).

Tribal Household and Community Economy

Construction

Construction of the B2H Project may temporarily restrict access to areas of the project within which Indian Tribes procure subsistence resources such as gathered plants, small and large game, and fish. Construction may also serve to temporarily disrupt wildlife populations that constitute subsistence resources. As there are no data to quantify the percent contribution to Tribal household or community income represented by these resources, effects caused by construction are not known.

Operation

Operation of the B2H Project may result in restriction of access to certain areas of the project, or may result in changes to vegetation or disruption to fish, small and large game populations, which could impact Tribes ability to procure subsistence resources. As there are no data to quantify the percent contribution to Tribal household or community income represented by these resources, effects caused by operation are not known.

Tax Revenues

Income, Business and Sales Taxes

Tax revenues will be generated by the B2H Project from income and business taxes. These taxes were not quantified as part of this analysis because they will be collected at the state/federal level and only a small portion will be passed along to county and city agencies. As a result, business and income taxes will likely have a very limited effect upon county and city revenues.

Oregon has no local sales or use taxes. Estimated expenditures were assigned to Owyhee County, Idaho based on the share of construction activity that will take place in that county. Total expenditures for construction materials, supplies, and equipment would be estimated to average approximately $820,000 per mile for the transmission line portion of the B2H Project. Expenditures on materials, supplies, and equipment to modify the Hemingway Substation would be estimated to be approximately $23.5 million. Assuming an Owyhee County sales and use tax rate of 6 percent, these expenditures would generate tax revenues of approximately $2.6 million, which is equivalent to approximately 1.7 times the amount of sales and use tax revenues paid to Owyhee County in 2010.

Operation of the B2H Project would generate sales and use tax revenues in Idaho as a result of local O&M expenditures. These impacts are expected to be small, especially when compared to the construction-related impacts.

Property Taxes

Estimated property tax revenues are presented by county in Table 3-294. These estimates are based on the projected value of the improvements included in the proposed B2H Project by county and average property tax rates. This table illustrates the relative contribution of the estimated project-related property tax revenues to county budgets by comparing estimated annual revenues with actual property tax revenues for 2010 by county. Estimated B2H Project-related property tax revenues range from less than 1 percent of 2010 property tax revenues in Umatilla County to about 5.7 percent of property tax revenues in Baker County.

The estimates presented in Table 3-294 indicate that the B2H Project would generate annual property taxes in Owyhee County equivalent to 4.7 percent of total 2011 property tax revenues. The State of Idaho limits the amount by which annual revenues from property tax can increase in each county. With some exceptions, this amount is limited to 3 percent based on the highest annual budget from the preceding 3 years. Exceptions include new construction (excluding public utilities), annexation, and previously unlevied funds (Houde 2012). In cases where increases in property tax revenues exceed 3 percent and are not exempt, the increase above 3 percent may provide an opportunity to lower levies for other taxpayers in the affected district.

Table 3-294. Estimated Property Tax Revenues

State/County	Estimated Annual Project-Related Property Taxes ($000)[1][2]	Actual 2010 Property Tax Revenues ($000)[1][3]	Estimated Property Tax as a Percent of 2010 Property Tax Revenues
Baker	912	15,980	5.7
Malheur	368	22,297	1.6
Morrow	1,212	21,460	5.6
Umatilla	365	69,974	0.5
Union	215	18,895	1.1
Owyhee	231	4,866	4.7

Table Source: Idaho State Tax Commission 2011

Table Notes: [1] Estimated project-related property tax revenues and actual property tax revenues from 2010 are in thousands of dollars ($000s). [2] Property tax estimates are based on the projected value of the proposed improvements, including transmission line and substation costs. The total value of the transmission line is assumed to be $1,759,500 per mile. Total substation values are assumed to be $26.1 million for Hemingway and $30.6 million for Grassland. Tax revenues are estimated using applicable county property tax rates. [3] These are actual property tax revenues received for 2010 (Idaho State Tax Commission 2011).

Community Services

Solid-Waste Management

Solid-waste generated during construction of the B2H Project would include a small portion of the soil and rock excavated for foundations. Other solid-waste generated would include broken insulators, scrap conductor, and empty conductor spools, as well as general construction waste, such as crates, pallets, and paper wrappings used to protect equipment and materials during shipping. The B2H Project is expected to generate about 13,909 cubic yards of waste during construction (or about 124 cubic yards of waste per week). This waste would likely be disposed of at various landfills located along the project's length and therefore no single landfill would be expected to accommodate the entire waste-load generated by project construction.

IPC will promote an aggressive recycling program in order to minimize the waste that will otherwise be disposed of in landfills. Wastes generated during construction will be collected in recycling and disposal containers, which will be located at multiuse areas. Separate disposal and recycling containers will be labeled by waste type in order to segregate materials as appropriate for recycling or disposal. Disposal and recycling containers will be of adequate size, design, and number to handle the amount of waste being generated. Landfill-supplied containers, such as 20- or 30-cubic yard rolloffs, will be used to collect scrap metal, wood and paper products, concrete waste, and other recyclable materials. Paper products and other materials, such as chemicals, batteries, glass, metals, and plastic, will be recycled when practical. As disposal and recycling containers reach capacity they will be sent to disposal facilities that can handle these materials, and the containers will be replaced with empty units. IPC's waste hauling contractor will be responsible for overseeing waste management, transporting waste to appropriate disposal facilities, and managing disposal and recycling containers.

The amounts of waste materials and wastewater generated during Project operation are expected to be minimal. Wastes, including vegetative waste, derived during this part of the project will likely be recycled or disposed of off-site by individual operations and maintenance crews. Therefore, waste management impacts are expected to be low.

Representatives from the Finley Buttes Landfill, which is about 12 miles south of Boardman, indicated the landfill has a total of 200 million cubic yards of storage, with only 8 million cubic yards of this storage used to date (Large 2011). Representatives from the Clay Peak Landfill, which is approximately 3 miles east of Payette, Idaho, indicated the landfill has a total of 2.3 million cubic yards of storage, and there are plans to expand the facility and add about 25 million cubic yards of storage (Schmidt 2011). There are no restrictions on the amount of waste that can be received per day at either facility (Table 3-283). Either landfill would be able to accommodate all the solid waste generated by the B2H Project (Large 2011; Schmidt 2011).

Representatives at the Baker Sanitary Landfill, which is about 7 miles north of Baker City, indicated they do not have a restriction on the amount of waste that can be accepted per day and would be able to accommodate any waste generated by the project (Freese 2011). However, the Lytle Boulevard Landfill in Vale, Oregon, indicated their facility is close to the permitted capacity for the amount of waste they can accept per day (Geedes 2011). Therefore, only limited waste from the B2H Project would likely be sent to the Lytle Boulevard Landfill, with the remaining waste sent to other facilities.

Operation of the transmission line would not produce measureable volumes of solid waste.

Law Enforcement

Construction of a transmission line can result in security issues that can have impacts to local law enforcement resources. The transmission line construction site(s) could become a target for crimes (e.g., theft of construction materials or equipment). In addition, about 75 percent of the work force needed to construct the line is expected to permanently reside outside the primary socioeconomic analysis area (i.e., the counties crossed by the proposed transmission line). Workers not hired from within the region would either temporarily relocate to the affected regions or commute in from their permanent residences.

Representatives of the 4 potentially affected sheriff's departments that responded to requests for information—Baker, Malheur, Owyhee, and Umatilla County sheriffs' departments—indicated that, while the construction site(s) could become a target for crimes and a temporary influx of construction workers could result in short-term increases in traffic incidents and other disturbances, the B2H Project was unlikely to require additional law enforcement resources or facilities (Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011).

During operations, new access roads and the transmission line and associated facilities could slightly increase demands on local law enforcement. These impacts expected to be low.

Fire Protection and Emergency Response

The B2H Project could result in an increased risk of fire during construction and operation. The BLM is responsible for fire suppression on the majority of the public lands crossed by the B2H project. The Deputy Fire Management Officer for the BLM indicated the B2H project would not impact their ability to suppress fires or require additional fire suppression resources.

The Keating Rural Fire District's fire chief expressed concerns regarding the risk of fighting fires near energized transmission lines as electricity could arc through the smoke and strike firefighters (Harper 2011). This issue is typically addressed by waiting for an electric transmission line to be de-energized before attempting to suppress fires in the immediate vicinity. This issue would be addressed through IPC outreach with local fire and emergency response agencies.

A representative of the all-volunteer Union Emergency Services–Fire Department expressed concern about the potential for new construction in Union County (including recent wind-farm developments) to have adverse impacts on their resources or their ability to serve the community (Johnson 2011). Recent construction has not, however, affected the department to date, and they are currently well equipped (Johnson 2011). The Fire Chief for the North Powder Fire Department indicated that an increased risk of fire during the summer could impact his department and their equipment could need to be upgraded to address this potential increase in fire risk.

IPC has proposed a Framework Fire Prevention and Suppression Plan as Appendix J to the Revised POD (2011). The Framework Plan includes provisions for sharing responsibilities and coordination with fire protection agencies; measures to reduce fire hazards during construction; and operations and maintenance procedures to reduce fire risk. Implementation of the Framework Fire Prevention and Suppression Plan measures would reduce the potential for the B2H Project to impact local fire departments to minor effects by reducing the risk of wildfires.

Health Care

Representatives from Saint Anthony Hospital, Grande Ronde Hospital, and Saint Alphonsus Medical Center have indicated that, given the size of the construction and operations workforces, injuries with the potential to occur during project construction and operations would not have a significant impact on these medical facilities (Blanc 2011; McCowan 2011; Vacheck 2011).

Schools

This analysis assumes that the Proposed Action and alternatives would be constructed in 2, approximately 150-mile-long spreads built concurrently. The estimated peak workforce in the northwest part of the analysis area (spread 1) could involve up to 182 construction workers temporarily relocating to the area during construction. Assuming that 10 percent of these non-local workers would relocate with their families, up to 18 children may need to be enrolled in local schools in the northwest part of the B2H Project area. The estimated peak workforce in the southeast part of the B2H Project area (spread 2) could involve the temporary relocation of up to 188 construction workers, with up to 19 children needing to be enrolled in schools in the southeast part of the project area. The school districts responded that they could to additional students.

During operations, existing IPC staff would be responsible primarily for the operation and maintenance of the transmission line and associated facilities. One additional part-time position would be filled locally. No employees would be required to relocate to the B2H Project area. As a result, during operations there would be no impact on school enrollment.

Agriculture

Construction

Construction of the B2H Project would disturb approximately 905.5 acres of agricultural land. Permanent disturbance would affect approximately 194.4 acres of agricultural land (see Section 3.2.6 Land Use, Agriculture, Recreation, Transportation). These totals represent a small share of agricultural land in the six potentially affected counties, which included approximately 5.5 million acres in 2007; subsequently, the overall potential impact on the agricultural industry would be very low.

As discussed in Section 3.2.6, IPC recognizes that construction of the B2H Project may impact agricultural operations. IPC would negotiate damage-related issues, such as reductions in the acreage available for cultivation, with affected farmers during the easement acquisition process.

Operations

The operation of the transmission line could impact farms by reducing the acreage available for cultivation and, in some cases, disrupting existing harvest patterns. The transmission line structures could affect the farmer’s ability to maneuver equipment in the vicinity of the immediately affected area. A new transmission line also has the potential to negatively affect farm operations that employ pivot irrigation systems. Potential impacts to agricultural land are discussed in Section 3.2.6 Land Use, Agriculture, Recreation, Transportation. The transmission line may include potential impacts to livestock grazing, crop production, dairy farms, confined animal feeding operations, and aerial spraying patterns.

Overall, the effects on the agricultural economy from operation of the B2H Project are expected to be low.

Timber Harvesting

Construction and Operations

In 2009, timber harvest was recorded in four of the six counties that comprise the analysis area, with harvested volumes ranging from about 9 million board feet (MMBF) in Umatilla County to about 45 MMBF in Morrow County (Figure 3-54). Construction and operation of the proposed Project would temporarily disturb approximately 570 acres of combined forest vegetation in the six counties and affect approximately 115 acres of forest vegetation during operations. The Timber Canyon Alternative would affect approximately 400 more acres of combined forest vegetation during construction than would the Proposed Action and 80 more acres during operations.

Trees cleared on forest land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. IPC has not surveyed the potentially affected forest land or developed estimates of the potential volume of timber that would be impacted. IPC would survey the affected timber prior to its removal to determine its value and ensure that affected land managers and landowners are appropriately compensated.

Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or IPC may clear the land and sell the timber per its agreement with the affected landowner. IPC would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Overall, the project-related effects of construction and operation of the proposed B2H Project and the alternatives on timber harvesting would be negligible.

Recreation and Tourism

Construction and Operations

B2H Project effects on recreation are described in Section 3.2.6. The construction and operations of the project are not expected to have adverse impacts on the economics of recreation and tourism in the analysis area. To the extent possible, recreation areas and features would be avoided during the siting process for the B2H Project. Construction activities, including the presence of construction crews, construction noise, and the generation of construction related dust could have localized temporary effects on dispersed recreation activities. These potential effects would be limited to the immediate areas of construction activity, short-term in nature, and unlikely to noticeably affect recreation and tourism businesses in the analysis area.

Property Values (General Property Impacts and Compensation)

Construction and Operations

The proposed B2H Project would require a new right-of-way involving a combination of right-of-way grants and easements between IPC and federal and state governments; other companies (e.g., utilities and railroads); and private landowners (including fee acquisition). IPC would obtain rights-of-way on private land as perpetual easements. The land for the proposed Grassland Substation is owned by Portland General Electric. IPC would own a portion of the substation equipment only. No additional land would be required at the Hemingway Substation.

The effect a proposed transmission line easement may have on property value is a damage-related issue that would be negotiated between the landowner and IPC during the easement acquisition process. This process is designed to provide just compensation to the landowner for the right to use the property for transmission line construction and operation. In theory, the value of each easement is equal to the difference in value of the affected property before and after easement acquisition and construction of the proposed facilities.

The required easements may encumber the affected right-of-way area with land-use limitations. Each easement would specify the extent of any encumbrances. Typical transmission line easement conditions include the right to clear the right-of-way and keep it clear of trees and structures, including structure-supported crops, brush, vegetation, and other potential fire and electrical hazards. Non-structure supported agricultural crops less than 14 feet tall may be allowed on some easement properties.

The impact of introducing a new right-of-way for transmission structures and lines can vary depending on the placement of the right-of-way in relation to the affected property's size, shape, and location of existing improvements. A transmission line may diminish the utility of a portion of property if the line effectively severs this area from the remaining property, resulting in severance damage. If it is determined that a specific property might obtain serious severance damages resulting from the final line route, an appraisal would likely be ordered to assess the compensation for the land and damages. Table 3-295 lists the number of residences near the Proposed Action and Alternatives.

Table 3-295. Number of Residences near the Proposed Action and Alternatives

Route Name	Residence Within 50 feet of ROW	Residence Within 200 feet of ROW	Residence Within 500 feet of ROW	Residence Within 1,000 feet of ROW
Proposed Action	1	1	5	16
Horn Butte Alternative	0	0	1	1
Longhorn Alternative	0	0	1	1
Longhorn Variation	0	0	0	0
Glass Hill Alternative	0	0	0	0
Timber Canyon Alternative	0	0	0	0
Flagstaff Alternative	0	0	0	2
Burnt River Mountain Alternative	0	0	0	0

Route Name	Residence Within 50 feet of ROW	Residence Within 200 feet of ROW	Residence Within 500 feet of ROW	Residence Within 1,000 feet of ROW
Tub Mountain South Alternative	0	0	0	0
Willow Creek Alternative	0	0	0	0
Malheur S Alternative	0	0	0	0
Malheur A Alternative	0	0	0	0
Double Mountain Alternative	0	0	0	0

Table Abbreviations: ROW = right-of-way.

The placement of the transmission line across a property may also have visual impacts. Each landowner has their perception of what is visually acceptable or unacceptable. This visual factor, as well as any other elements unique to the property, is generally taken into consideration to determine the loss in value within the easement area, as well as outside the easement area in cases of severance.

Regarding access roads, if IPC acquires an easement on an existing access road and the landowner is the only other user, market compensation is generally 50 percent of full fee value. If other landowners share the access road use, compensation is usually something less than 50 percent. For fully improved roads, an appraiser may prepare a cost analysis to identify the value of the access road easement. If IPC acquires an easement for the right to construct a new access road and the landowner has equal benefit and need of the access road, market compensation is generally 50 percent of full fee value. If the landowner has little or no use for the new access road, market compensation for the easement is generally close to full fee value. Changes in land use often raise concerns about the potential effect these changes may have on nearby property values. Zoning is the primary means most local governments use to protect property values. Zoning is intended to avoid conflicting uses by allowing some uses and disallowing others or by permitting them only as conditional uses.

Research into the relationship between electric transmission facilities and local property values tends to focus on residential properties, employing research methods that can, for the most part, be divided into surveys and opinion-based studies and quantitative studies largely based on comparisons of market data.

Research conducted since the 1980s supports the idea that proximity to transmission lines may affect the desirability and, therefore, the value of residential property (Bottemiller et al. 2000; Colwell 1990; Cowger et al. 1996; Delaney and Timmons 1992; Des Rosiers 2002; Hamilton and Schwann 1995). Some observers linked this general change in perspective to increased concerns regarding potential EMF-related health effects, but a nationwide survey of real estate appraisers suggests that, for the most part, potential negative effects on property values tend to be related to the visual impact of transmission line facilities (Delaney and Timmons 1992).

The results of the studies cited above suggest that proximity to electric transmission lines can have negative effects on residential property values, with average impacts ranging from less than 1 percent to about 10 percent. The findings of these studies also suggest that this impact decreases with distance and tends to decline over time. Studies of property-value impacts during periods of physical change, such as new transmission line construction or structural rebuilds, have generally revealed greater short-term impacts than a long-term effect. Most studies have concluded that other factors, such as the general location, the size of property, improvements, conditions, amenities, and supply and demand factors in a specific market area are more important criteria than the presence or absence of transmission lines in determining the value of residential real estate.

Some short-term adverse impacts on residential property values (and salability) might occur on an individual basis as a result of the B2H Project. However, these impacts would be highly variable, individualized, and are difficult to predict. Unique Project characteristics that need to be taken into consideration when assessing the potential effects of transmission line structures on residential property values include the type and height of the structures, the distance and view from the potentially affected property, intervening topography and vegetation, and the property market and type of landscape involved.

Few studies have addressed the impacts of transmission lines on the value of commercial and industrial properties. Those that have done so generally find the impacts are less than the impacts on residential properties. In interviews with appraisers, real-estate brokers, and owners and managers of commercial and industrial parks, Chapman (2005) found that, for the most part, the presence of a transmission line had little effect on market prices for commercial and industrial properties.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human-health or environmental effects of its programs, policies, and activities on minority and low-income populations. The order further stipulates that the agencies conduct their programs and activities in a manner that does not exclude persons from participation in them, deny persons the benefits of them, or subject persons to discrimination because of their race, color, or national origin.

Environmental Justice Screening Analysis

Evaluating whether a project has the potential to have disproportionately high and adverse impacts on minority and/or low-income populations typically involves: 1) identifying any potentially high and adverse environmental or human-health impacts, 2) identifying any minority or low-income communities within the potentially high and adverse impact areas, and 3) examining the spatial distribution of any minority or low-income communities to determine if they would be disproportionately affected by these impacts.

Guidelines provided by the CEQ (1997) and EPA (1998) indicate that a minority community may be defined where either 1) the minority population comprises more than 50 percent of the total population, or 2) the minority population of the affected area is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison. Minority communities may consist of a group of individuals living in geographic proximity to one another or a geographically dispersed set of individuals who experience common conditions of environmental effect. Further, a minority population exists if there is “more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997:26).

The CEQ and EPA guidelines indicate that low-income populations should be identified based on the annual statistical poverty thresholds established by the U.S. Census Bureau. Like minority populations, low-income communities may consist of individuals living in geographic proximity to one another or a geographically dispersed set of individuals who would be similarly affected by the project or program. The U.S. Census Bureau defines a poverty area as a census tract or other area where at least 20 percent of residents are below the poverty level (U.S. Census Bureau 2009b).

Race and ethnicity data from the 2010 census are available at the census block group level. The percent of the population identifying as White alone in the 2010 census exceeded 50 percent in all but one of the potentially affected census block groups, with shares ranging from 55 percent to 97 percent, and as a result, the population in these census block groups did not meet the definition of a minority community based on the criteria that the minority population comprises more than 50 percent of the total population. The block group that would be crossed in Morrow County, Oregon, is the one exception, with 45 percent of the total population identifying as White in the 2000 census and a minority population that exceeds 50 percent of the total (Table 3-296). Census block data for 2000 and 2010 are in Tables B.10-1 and B.10-2 in Appendix B.10.

The minority population in each census block group was also compared with its respective county average in 2010 to identify areas where the minority population is potentially "meaningfully greater" than the minority population in the general population. This comparison identified one census block group in Owyhee County, Idaho, where the Hispanic or Latino share of the population was more than 10 percent higher than the county average (43% versus 26%).

Table 3-296. Race and Ethnicity Census Block Group Comparison, 2010

Geographic Area[1]	Total	Percent of Total Population				
		White[2]	Hispanic or Latino	American Indian and Alaska Native[2]	Black or African American[2]	Other Race[2][3]
Morrow County, Oregon	11,173	65	31	1	0	3
Block Group 5, Census Tract 9701	1,680	45	53	1	0	1
Owyhee County, Idaho	11,526	68	26	4	0	2
Block Group 1, Census Tract 9501.02	1,460	55	43	1	0	1

Table Source: U.S. Census Bureau 2011b

Table Notes: [1] Only those census block groups where a) the minority population exceeds 50 percent of the total population or b) the minority population is more than 10 percent higher than the minority population in the corresponding county are included here. [2] Non-Hispanic only. The federal government considers race and Hispanic/Latino origin (ethnicity) to be two separate and distinct concepts. The data summarized in this table present Hispanic/Latino as a separate category. People identifying as Hispanic or Latino origin and counted in this category may be of any race. [3] The "Other Race" category presented here includes census respondents identifying as Asian, Native Hawaiian and Other Pacific Islander, Some Other Race, or Two or More Races.

The most recent year that income and poverty data are available at the census block group level is 1999, when 2 of the affected census block groups had more than 20 percent of their population below the poverty level. One other group had between 19.7 percent of their population below the poverty level (Table 3-297).

Table 3-297. Income and Poverty Census Block Comparison

Geographic Area[1]	Percent of Total Population		Percent of Population Below the Poverty Level[1]
	Dollars[1][2]	Percent of County/State Median[1][3]	
Baker County, Oregon	30,367	74	14.7
Block Group 2, Census Tract 9503	24,107	79	19.0
Block Group 3, Census Tract 9506	22,014	72	15.3
Malheur County, Oregon	30,241	74	18.6
Block Group 1, Census Tract 9707	28,750	95	24.4
Morrow County, Oregon	37,521	92	14.8
Umatilla County, Oregon	36,249	89	12.7
Union County, Oregon	33,738	82	13.8
Block Group 3, Census Tract 9702	26,354	78	21.9
Oregon	40,916	100	11.6
Owyhee County, Idaho	28,339	75	16.9
Block Group 2, Census Tract 9501.01	34,348	121	19.7
Idaho	37,572	100	11.8

Table Source: U.S. Census Bureau 2000c

Table Notes: [1] All data are for 1999. The most recent data available at the census block group level. Only census block groups with a) a median household income at least 20 percent below the county average and/or b) 20 percent or more of its population below the poverty rate are included here. [2] Median incomes are presented in 1999 dollars unadjusted for inflation. [3] Income for census block groups is presented as a share of the appropriate county average; totals for each county are presented as a share of the respective state average.

Effects to Minority and Low Income Communities

Construction and Operations

The potential minority and low-income census block groups identified in the Environmental Justice Screening Analysis would not be affected by construction or operation of the Proposed Action or alternatives because the B2H Project is not expected to have high and adverse impacts on the populations in these areas or elsewhere. In most cases, the comparison portion of the Proposed Action route and the alternative route crosses one of these census block groups. There are, however, several exceptions where the alternative route would not cross a census block group that is crossed by the comparison portion of the Proposed Action route or vice versa. Viewed in terms of the potential minority and low income census blocks identified, the Malheur S and Malheur A alternatives would avoid crossing Census Tract 9707, Block Group 1 in Malheur County, and the Timber Canyon Alternative would avoid crossing Census Tract 9503, Block Group 2 in Baker County.

In addition, three alternatives would cross census block groups not crossed by the Proposed Action route. The Timber Canyon Alternative would cross Census Tract 9702, Block Group 1 in Union County, which would not be crossed by the Proposed Action route. Despite having a slightly higher median household income than the county average, 22 percent of the population in this block group was below the poverty level in 1999 (U.S. Census Bureau 2000c). The Tub Mountain and Willow Creek alternatives would both cross Census Tract 9706, Block Group 1 in Malheur County. Despite having a higher median household income than the county average, 21 percent of the population in this block group was below the poverty level in 1999 (U.S. Census Bureau 2000c).The data suggest the B2H Project would cross census block groups that could be considered minority or low-income communities. However, construction of the B2H Project is not expected to have high and adverse human-health or environmental effects on nearby communities. Construction-related impacts would likely include increases in local traffic, noise, and dust which could result in temporary delays at some highway crossings. Construction workers temporarily relocating to the B2H Project area would increase demand for local housing resources. These impacts would be temporary and localized and are not expected to be high.

Construction would also temporarily increase the demand for education, health care, and municipal services, as well as potentially increase the demand for police and fire-protection services. However, these impacts would not measurably affect the quality of services currently received by local communities and residents.

The Proposed Action does not cross any Native American reservations but is located within two-miles of the Umatilla Indian Reservation.

Communities of Shared Interest

The term *community of shared interest* is used here to refer to geographically dispersed individuals who could experience common conditions of environmental effect. The National Agricultural Workers Survey for fiscal years 2001 and 2002 (the most recent available) found that 83 percent of crop workers in the United States identified themselves as members of a Hispanic group, and 78 percent of crop workers were born outside the United States, primarily in Mexico (75% of all crop workers) (U.S. Department of Labor 2005). This survey also found that 30 percent of all farm workers had total family incomes below federal poverty guidelines.

The potential effects of B2H Project construction and operations on agricultural production, and indirectly on agricultural workers, are addressed in Section 3.2.6 Land Use, Agriculture, Recreation, and Transportation. Viewed in terms of agricultural operations in the potentially affected counties, the total estimated construction disturbance represents a very small share of the 5.5 million acres of land on farms in the six potentially affected counties and is unlikely to noticeably affect overall agricultural production and employment in the affected counties. In addition, the impacts to agricultural production that would occur are not expected to have adverse human-health or environmental effects on farm workers.

Socioeconomic Effects to Tribes

Native American tribes in the B2H Project area rely on lands and resources outside reservation areas for traditional uses, including hunting, gathering plants and spiritual practices. Tribal members also harvest and gather materials for economic purposes, to support crafts and manufacture of items for sale to generate income. No reported information describing the types and quantities of materials gathered or products sold and revenue generated, are generally available. However, adverse effects to plants and wildlife that could reduce hunting success or make key plants scarcer could have adverse economic effects on Native Americans who rely on these materials for subsistence and income.

3.2.11.7 Mitigation Planning

On balance, the overall economic effects of the proposed B2H Project and the alternatives are anticipated to be positive, in the form of increased employment opportunities and increased area spending and tax revenue generation. Anticipated social effects on community services are anticipated to be temporary and minor during the construction period, therefore no specific mitigation actions have been proposed.

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3.2.12 Public Health and Safety

3.2.12.1 Introduction

This section discusses the noise environment and noise that may be produced by construction, operations, and decommissioning of the proposed B2H Project. This section addresses the electrical environment that would be created by the proposed B2H Project. The regulatory framework, scoping issues, methodology, and affected environment are presented, followed by a discussion of the environmental impacts.

3.2.12.2 Regulatory Framework

This section describes the applicable federal, state, county, and local government laws and regulations for noise and electrical environment. The State of Idaho does not have applicable noise regulations.

Noise

Federal

U.S. Environmental Protection Agency

The Environmental Protection Agency (EPA) has not promulgated standards or regulations for environmental noise generated by transmission lines and associated ancillary equipment; however, the EPA has published a guideline that specifically addresses issues of community noise (EPA 1974). This document, commonly referred to as the “noise levels document,” contains goals for noise levels affecting residential land use. EPA’s study is the only published study that includes a large database of community reaction to noise to which a proposed project can be readily compared. This publication evaluates the effects of environmental noise with respect to health and safety and activity interference. Its intended purpose is to provide relevant scientific information for state and local governments for use in developing their own ambient noise standards, though it states the levels are not construed as standards because they do not take into account cost or feasibility.

For outdoor residential areas and other locations in which “quiet” is a basis for human use, the recommended EPA guideline is an L_{dn} of less than 55 dBA for exterior levels and less than 45 dBA for interior levels. The EPA also suggests an L_{eq} limit of 70 dBA calculated over a 24-hour day to avoid adverse effects on public health and safety at publicly accessible property lines or work areas where extended public exposure is possible. The EPA criteria results are summarized in Table 3-298, which identifies levels of environmental noise below which there is no evidence that the general population will be at risk to EPA-identified health effects. The general noise limits for avoiding effects of outdoor and indoor activity interference and annoyance are also presented.

Table 3-298. Summary of EPA Noise Levels

Location	Level (dBA)	Effect
All publicly accessible areas with prolonged exposure	70 L_{eq} (24-hour)	Safety/hearing loss concerns
Outdoor areas at residential structures and other noise-sensitive receptors where a large amount of time is spent	55 L_{dn}	Protection against annoyance and activity interference

Location	Level (dBA)	Effect
Outdoor areas where limited amounts of time are spent (park areas, school yards, golf courses, etc.)	55 L_{eq} (24-hour)	Protection against annoyance and activity interference
Indoor residential areas	45 L_{dn}	Protection against annoyance and activity interference
Indoor nonresidential areas	45 L_{eq} (24-hour)	Protection against annoyance and activity interference

Table Abbreviations: dBA = A-weighted decibel; L_{eq} = equivalent sound level; L_{dn} = day-night sound level.

U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development Noise Guidebook Chapter 2 (24 Code of Federal Regulations, Section 51.101[a][8]) also recommends that exterior areas of frequent human use follow the EPA guideline of 55 dBA L_{dn}. However, the same section indicates that a noise level of up to 65 dBA L_{dn} could be considered acceptable.

U.S. Department of Transportation

The U.S Department of Transportation has established noise abatement criteria for vehicular traffic and airports administered by the Federal Highway Administration (FHWA) (23 CFR 772) and the Federal Aviation Administration (FAA) (14 CFR 150), respectively. While neither agency establishes noise standards for transmission line projects, the noise abatement criteria are useful in determining the noise impacts generated by the construction equipment and helicopters used to construct and operate the B2H Project.

The U.S Department of Transportation has identified criteria for the assessment of short- and long-term construction activities for both stationary and mobile projects, and specifically for linear projects. FHWA recommends abatement of construction noise that exceeds maximum levels at noise-sensitive areas. These Project construction noise criteria take into account the diurnal pattern of construction activities, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. While these criteria were not developed to specifically address construction noise impact for power transmission line projects, the guidelines shown in Table 3-299 provide reasonable criteria for B2H Project construction noise assessment. If these criteria noise levels are exceeded, adverse community reaction may result.

Table 3-299. Summary of U.S. Department of Transportation Guidelines for Short- and Moderate-Duration Construction Noise

Location	Daytime dBA Level (8-hour L_{eq})	Nighttime dBA Level (8-hour L_{eq})
Short-Duration Noise		
Noise-sensitive receptors (residences)	90	80
Commercial	100	100
Industrial	100	100

Location	Daytime dBA Level (8-hour L_{eq})	Nighttime dBA Level (8-hour L_{eq})
Moderate-Duration Noise		
Noise-sensitive receptors (residences)	80	70
Commercial	85	85
Industrial	90	90

Table Source: FHWA2006.

Table Abbreviations: dBA = A-weighted decibels; L_{eq} = equivalent sound level.

FHWA noise guidelines provide procedures for noise studies and noise abatement measures to help protect the public's health, welfare and livability, supply noise abatement criteria, establish requirements for information to be given to local officials for use in the planning and design of highways approved pursuant to Title 23 U.S.C. For this Project FHWA information was used to estimate traffic generated noise for various vehicle types.

The FAA establishes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs (14 CFR Part 150, Airport Noise Compatibility Planning). Part 150 prescribes single systems for—(a) measuring noise at airports and surrounding areas that generally provides a highly reliable relationship between projected noise exposure and surveyed reaction of people to noise; and (b) determining exposure of individuals to noise that result from the operations of an airport. Part 150 also identifies those land uses which are normally compatible with various levels of exposure to noise by individuals. Studies conducted by the FAA and aircraft manufacturers, such as Bell Helicopters and Sikorsky, have identified typical noise levels for helicopters in various modes. These studies develop reasonable estimates of the noise levels generated by helicopters.

State of Oregon

As a part of the ODOE EFSC process, IPC must provide a set of specific exhibits to document that the proposed B2H Project will meet standards established under the Oregon Administrative Rules (OAR) as well as standards set by other agencies or regulations. OAR 345-021-0010(1)(x) requires "information about noise generated by construction and operation of the proposed facility, providing evidence to support a finding by the Council that the proposed facility complies with the Oregon Department of Environmental Quality's noise control standards in OAR 340-35-0035."

OAR 340-035-0035*, Noise Control Regulations for Industry and Commerce*, prescribes noise regulations applicable throughout the state of Oregon. The ODOE is examining how these requirements may be applied to utility-scale transmission line projects.

The Oregon regulations provide differing standards for new noise sources on a previously used site (OAR 340-035-0035(1)(b)(A)) and new noise sources on an unused site (OAR 340-035-0035(1)(b)(B)(i and ii)). The daytime and nighttime standards for previously used sites set forth in Table 8 of OAR 340-035-0035 (reproduced here as Table 3-300). These standards establish the maximum allowable limits for statistical (percentile) sound levels. Percentile sound level (L_n) represents the sound level exceeded for a given percentage (n percent) of time over a specified measurement period. For instance, L_{10} is the sound level exceeded 10 percent of the time; it is often referred to as the intrusive noise level.

Table 3-300. New Industrial and Commercial Noise Level Standards at Previously Used Sites

Statistical Descriptor	Maximum Permissible Statistical Noise Levels (dBA)—Daytime (7 a.m.–10 p.m.)	Maximum Permissible Statistical Noise Levels (dBA)—Nighttime (10 p.m.–7 a.m.)
L_{50}	55	50
L_{10}	60	55
L_1	75	60

Table Source: OAR 340-035-0035, Table 8.

Table Abbreviations: L_{50}, L_{10}, and L_1 = sound level exceeded for 50 percent, 10 percent, or 1 percent of a measurement period; dBA = A-weighted decibels.

Where the proposed transmission line involves rebuilding an existing line or is adjacent to an existing line, the interpretation of whether the site will be considered previously used or unused has not been clarified by ODOE. Some indication has been given that if a new transmission line is built within an existing right-of-way and does not modify that right-of-way, the site will be considered previously used, and the statistical noise limits established in Table 8 of the Oregon regulations would be applicable.

The Oregon regulations establish separate standards for new noise sources on a previously unused site. These standards, known as ambient degradation standards, are as follows:

> OAR 340-035-0035(1)(b)(B)(i): No person owning or controlling a new industrial or commercial noise source located on a previously unused industrial or commercial site shall cause or permit the operation of that noise source if the noise levels generated or indirectly caused by that noise source increase the ambient statistical noise levels, L_{10} or L_{50}, by more than 10 dBA in any one hour, or exceed the levels specified in Table 8, as measured at an appropriate measurement point, as specified in subsection (3)(b) of this rule, except as specified in subparagraph (1)(b)(B)(iii).

> OAR 340-035-0035(1)(b)(B)(ii): The ambient statistical noise level of a new industrial or commercial noise source on a previously unused industrial or commercial site shall include all noises generated or indirectly caused by or attributable to that source including all of its related activities. Sources exempted from the requirements of section (1) of this rule, which are identified in subsections (5)(b) - (f), (j), and (k) of this rule, shall not be excluded from this ambient measurement.

In order to determine compliance with Oregon regulations, a rural ambient noise level of 26 dBA was assumed. This is a conservative analysis approach, principally for the purpose of preliminarily assessing whether the B2H Project will meet Oregon standards in advance of the formal determination of compliance by the EFSC. Where localized, existing ambient noise levels are already greater than 26 dBA due to the proximity of a roadway or other noise sources, the threshold for determining whether there is ambient noise degradation will be 10 dBA higher than the measured and documented ambient sound level.

The ambient noise degradation limits apply at "appropriate measurement points" on "noise sensitive property." The appropriate measurement point is defined as whichever of the following is farther from the noise source:

- 25 feet toward the noise source from that point on the noise-sensitive building nearest the noise source
- that point on the noise-sensitive property line nearest the noise source

Noise-sensitive property is defined as "real property normally used for sleeping, or normally used as schools, churches, hospitals or public libraries. Property used in industrial or agricultural activities is not considered noise-sensitive unless it meets the above criteria in more than an incidental manner. Where there are no noise-sensitive properties, the allowable noise levels are not limited. The terms *noise-sensitive property* and *noise-sensitive receptor* refer to the same kinds of properties and are interchangeable. For the purposes of this EIS, the term *noise-sensitive receptor* is used throughout.

OAR 340-035-0035 Table 9 (reproduced here as Table 3-301) sets noise limits for "quiet areas," which are defined by the Oregon rules as any lands or facilities designated by the Oregon Department of Environmental Quality (ODEQ) as an appropriate area where the qualities of serenity, tranquility, and quiet are of extraordinary significance and serve an important public need. There are no ODEQ-designated "quiet areas" identified within the analysis area.

Table 3-301. Industrial and Commercial Noise Level Standards for Quiet Areas

Statistical Descriptor	Maximum Permissible Statistical Noise Levels (dBA)—Daytime (7 a.m.–10 p.m.)	Maximum Permissible Statistical Noise Levels (dBA)—Nighttime (10 p.m.–7 a.m.)
L_{50}	50	45
L_{10}	55	50
L_{1}	60	55

Table Source: OAR 340-035-0035, Table 9.

Table Abbreviations: L_{50}, L_{10}, and L_{1} = sound level exceeded for 50 percent, 10 percent, or 1 percent of a measurement period; dBA = A-weighted decibels.

OAR 340-035-0035(1)(f) establishes standards to regulate octave-band sound-pressure levels and audible discrete tones. Table 10 of OAR 340-035-0035 provides the most restrictive of the octave-band frequency limits applicable to daytime and nighttime periods; these frequency limits are reproduced here as Table 3-302. Such standards can be applied by the ODEQ when it believes the requirements imposed on existing noise sources and new noise sources do not adequately protect the health, safety, or welfare of the public. Given the separation distances between the proposed route and alternative routes and identified noise-sensitive receptors, received sound levels are expected to be at least 10 dB below the allowable sound pressure levels at any given frequency band.

The Oregon noise-control regulations also contain requirements pertaining to blasting and impulse noise, measuring, monitoring, and reporting requirements.

Table 3-302. Median Octave-Band Standards for Industrial and Commercial Noise Sources

	Octave-Band Center Frequencies								
Frequency (hertz)	31.5	63	125	250	500	1,000	2,000	4,000	8,000
Daytime limit (linear decibels)	68.0	65	61	55	52	49	46	43	40
Nighttime limit (linear decibels)	65.0	62	56	50	46	43	40	37	34

Table Source: OAR 340-035-0035, Table 10.

Exemptions to Oregon State Noise Regulations

OAR 340-035-0035(5) specifically exempts construction activity from the state noise standards and regulations as described below. This section of the Oregon rules also provides an exemption for the maintenance of capital equipment, the operation of aircraft (such as helicopters used in B2H Project construction), and sounds created by activities related to timber harvest.

> OAR 340-035-0035(5) Exemptions:
>
> Except as otherwise provided in subparagraph (1)(b)(B)(ii) of this rule, the rules in section (1) of this rule shall not apply to:
>
> *[note: this section abridged for brevity]*
>
> (b) Warning devices not operating continuously for more than 5 minutes;
>
> (g) Sounds that originate on construction sites.
>
> (h) Sounds created in construction or maintenance of capital equipment;
>
> (j) Sounds generated by the operation of aircraft and subject to pre-emptive federal regulation. This exception does not apply to aircraft engine testing, activity conducted at the airport that is not directly related to flight operations, and any other activity not preemptively regulated by the federal government or controlled under OAR 340-035-0045;
>
> (k) Sounds created by the operation of road vehicle auxiliary equipment complying with the noise rules for such equipment as specified in OAR 340-035-0030(1)(e);
>
> (m) Sounds created by activities related to the growing or harvesting of forest tree species on forest land as defined in subsection (1) of ORS 526.324.
>
> OAR 340-035-0035(6), Exceptions, allows for some exemptions to the state noise regulations:

Upon written request from the owner or controller of an industrial or commercial noise source, the Department may authorize exceptions to section (1) of this rule, pursuant to rule 340-035-0010, for:

(a) Unusual and/or infrequent events;

(b) Industrial or commercial facilities previously established in areas of new development of noise sensitive property;

(c) Those industrial or commercial noise sources whose statistical noise levels at the appropriate measurement point are exceeded by any noise source external to the industrial or commercial noise source in question;

(d) Noise sensitive property owned or controlled by the person who controls or owns the noise source;

(e) Noise sensitive property located on land zoned exclusively for industrial or commercial use.

County and Local Regulations

The proposed B2H Project, including alternative segments, traverses six counties: Morrow, Umatilla, Union, Baker, and Malheur in Oregon and Owyhee in Idaho. The proposed route passes within 1 mile of the following 12 incorporated Oregon municipalities: Dixie, Oxman, Pleasant Valley, Quartz, Weatherby, Boardman, Boardman Junction, Cecil, Ella, McKay, Bodie, and Sago. None of these counties or municipalities has any noise ordinances or bylaws directly applicable to the B2H Project, nor any nuisance ordinances that contain decibel limits. The Oregon counties defer to OAR Chapter 340, Division 35, for the purposes of assessing compliance, given the stringency of these criteria limits. The 2012 Umatilla County Development Code includes noise in its conditional-use permit criteria according to Section 152.085: "The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning." This qualitative permit criterion is applicable to all county land use zones. There are, however, no applicable numerical decibel limits prescribed by Umatilla County regulations.

Electrical Environment

Federal

Electric and Magnetic Fields

In the United States there are no federal regulations or guidelines that apply directly to occupational or residential exposure to power-frequency electric and magnetic fields. In the 1990s, the National Institute of Environmental Health Sciences (NIEHS) conducted an extensive federal review of electric and magnetic field-related issues as part of a report to Congress (NIEHS 1999). NIEHS concluded that the level and strength of evidence supporting ELF-EMF (extremely low frequency- electromagnetic fields) exposure as a human health hazard are insufficient to warrant aggressive regulatory actions, such as stringent standards on electric appliances or a national program to bury all transmission and distribution lines. Instead, NIEHS recommended passive regulatory action such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures.

Although there are no federal regulations on low-frequency electric and magnetic fields in the United States, recommendations and guidelines are provided by international organizations and U.S. nongovernment organizations. Bonneville Power Administration (BPA) follows electric field guidelines for design of new transmission lines. BPA's guidelines include guidelines of 9 kV/m maximum on the right-of-way, 2.5 kV/m maximum at the edge of the right-of-way, 5 kV/m for road crossings, and 2.5−3.5 kV/m in parking lots. Table 3-303 lists electric and magnetic field guidelines recommended by the European Union; the Institute of Electrical and Electronics Engineers (IEEE); the International Committee on Electromagnetic Safety (ICES); the International Commission on Non-Ionizing Radiation Protection (ICNIRP), an affiliate of the World Health Organization; and the American Conference of Governmental Industrial Hygienists (ACGIH).

Table 3-303. International Guidelines for AC Electric and Magnetic Field Levels

Agency	Exposure	Location	Electric Field (kV/m)	Magnetic Field (G)
European Union	General public	Edge of ROW	4.2	0.833
IEEE	Occupational	Within ROW	20	27.1
IEEE	General public	Within ROW	10	9.04
ICES	Occupational	Within ROW	20	27.1
ICES	General public	Edge of ROW	5	9.04
ICNIRP	Occupational	Within ROW	8.3	4.17
ICNIRP	General public	Edge of ROW	4.2	0.833
ACGIH	Occupational	Within ROW	25	10.0
ACGIH	Workers with cardiac pacemakers	Within ROW	1	1 (1,000 mG)

Table Sources: IEEE 2002 (Standard C95.6-2002); ICES 2002; ICNIRP 2009; ACGIS 2001.

Table Abbreviations: AC = alternating current; ACGIH = American Conference of Governmental Industrial Hygienists; G = gauss; Hz = hertz; mG = milligauss; ICES = International Committee on Electromagnetic Safety; ICNIRP = International Commission on Non-Ionizing Radiation Protection; IEEE = Institute of Electrical and Electronic Engineers; kV/m = kilovolt per meter; ROW = right-of-way; T = tesla; µT = microtesla.

Table General Note: In the United States, magnetic fields are measured in G and mG; 1.0 G = 1,000 mG. Internationally, magnetic fields are reported and measured in T; 1.0 T = 1,000,000 µT. To convert, 1.0 µT = 10.0 mG or 0.1 µT = 1.0 mG.

Radio and Television Interference

Electromagnetic interference from power transmission systems in the United States is governed by the Federal Communication Commission (FCC) rules and regulations (Title 47 CFR Chapter 1). The FCC categorizes a power transmission line as an *incidental radiation device*, which is defined as follows: "a device that radiates radio frequency energy during the course of its operation although the device is not intentionally designed to generate radio frequency energy" 47 CFR 15.3(n). Such a device shall be operated so that the radio frequency energy that is emitted does not cause harmful interference. In the event that harmful interference is caused, the operator of the device shall promptly take steps to eliminate the harmful interference. *Harmful interference* is defined as "any emission, radiation or induction which endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radio communication service operating in accordance with this chapter" (47 CFR 15.3(m)).

Complaints related to corona-generated interference are infrequent. The advent of cable and satellite television, with the move to digital broadcast television in June 2009, has further reduced the possibility of corona-generated interference. Cable, satellite, and digital broadcasts are generally not subject to corona-generated interference.

STATE

Electric and Magnetic Fields

Seven states, including Oregon, have regulations for low-frequency electric or magnetic field levels. These states have adopted limits for electric field strength either at the edge or within the right-of-way of transmission line corridors. For Oregon, the guideline for electric field strength is 9-kV/m within the right-of-way. Only Florida and New York currently have regulations limiting magnetic field levels from transmission lines; these regulated levels only apply at the edge of the right-of-way and were based on an objective of preventing field levels from increasing beyond levels currently produced by existing lines and by the public.

3.2.12.3 Issues Identified for Analysis

Noted below are issues identified for analysis in this section, and summary responses to each issue. Detailed explanation in this section provides further details to each issue.

Noise

- Would noise from construction or the electrical line be harmful to people, livestock, and wildlife?
- Would the project cause ground vibrations?
- Will noise from the power line affect livestock?

Electrical Environment

- Would electrical fields interfere or cause harm to nearby metal objects, such as vehicles, animal feeders, watering stations, or other equipment and fences?
- Would electrical fields effect or cause harm to people, livestock, wildlife?
- Will there be any interference from electrical fields to communications or navigation services?

3.2.12.4 Methodology

The methodology used to describe the environmental consequences for noise and electrical environment is described below. This section includes a description of the analysis area and methods.

NOISE

The analysis area for noise effects is 0.5 mile from the right-of-way line on both sides of the right-of-way. To analyze noise impacts, all structures within 0.5 mile of the edge of the proposed right-of-way were inventoried. Noise-sensitive receptors include residences, schools, day care facilities, hospitals, long-term care facilities, places of worship, libraries, historic properties with religious and/or cultural significance, and parks and recreational areas, including wilderness areas.

The evaluation of noise energy created by the B2H Project involves an identification of the existing or ambient sound levels followed by a prediction of the future sound levels attributed to the B2H Project. The difference in sound levels is the sound level impact created by the B2H Project. IPC conducted an inventory of existing ambient sound levels at approximately 730 identified receptors along the Proposed Action and alternative routes. The location of the receptors, distance from the right-of-way, receptor types, and measured ambient noise levels at each receptor are presented in Table B.11-1 in Appendix B.11. A total of 87 noise-sensitive receptors were identified along the Proposed Action, and 29 receptors were identified along the alternatives.

Noise levels from overhead transmission line construction were evaluated using a screening-level analysis approach that is semi-qualitative. The construction calculation methodology requires inputting the number and type of construction equipment by phase, and typical noise-source levels associated with that equipment, to determine the received sound levels by phase. Received construction sound levels are described at set distances of 50 and 1,000 feet from the transmission line, rather than for discrete noise-sensitive receptors, which is a sufficient screening-level effects approach, considering the temporary nature of construction noise impacts.

Transmission line noise would be the principal long-term sound source of the B2H Project, could have potential long-term impacts on noise-sensitive receptors, and was therefore analyzed in more detail. The operations assessment procedure involved the following three steps:

1. Determine sound-source characteristics of the transmission line from standardized engineering technical guidelines and literature sources that reflect actual measurements of existing transmission lines of similar design under similar weather conditions;
2. Simulate sound levels using internationally accepted calculation standards to represent elevated sound sources (such as transmission lines) as accurately as possible under a range of weather conditions, including those that typically result in greater noise production. Receivers outside the L50 36 dBA isopleth are assumed to be within acceptable noise levels.
3. Make assumptions to establish the pre-existing background-noise level at relevant receivers inside the L50 36 dBA noise contour isopleths.

Noise modeling for the B2H Project involved two analytical methods. In the first, corona-source noise levels were calculated using methodologies described in the Corona and Field Effects (CAFE) program (version 3.0) developed by U.S. Department of Energy, Bonneville Power Administration (BPA). CAFE is used to determine anticipated corona noise levels generated along the transmission line conductors. The second acoustic modeling using the Computer Aided Noise Abatement (CadnaA) program (version 4.1.137), published by DataKustik in Munich, Germany, models how sound travels outward from the transmission line and construction sites to noise receptors. Together, these two methods are used to predict levels of project-related noise at noise-sensitive receptor sites.

ELECTRICAL ENVIRONMENT

The electrical environment analysis area is the land directly under and adjacent to the Proposed Action and alternative transmission line routes. The typical right-of-way width would be 250 feet, with a 100-foot-wide right-of-way for the 138/69-kV portions of the B2H Project. Profiles of the expected levels of electric and magnetic fields generated by the project are calculated to a distance of 300 feet on both sides of the centerlines of the proposed and alternative routes.

A computer program developed by the BPA was used to determine expected levels of electric fields, magnetic fields, and radio interference from the B2H Project. Table 3-304 lists the B2H proposed line segments with the characteristics and the peak loadings used for calculation of the magnetic fields.

Table 3-304. Proposed Transmission Lines by County

County	Line Description	Line Status	Type	Loading Peak Current (amps/phase)
Morrow (OR)	Single circuit—500 kV	New	Lattice tower	2,500
Umatilla (OR)	Single circuit—500 kV	New	Lattice tower	2,500
Union (OR)	Single circuit—500 kV	New	Lattice tower	2,500
Baker (OR)	Single circuit—500 kV	New	Lattice tower	2,500
Baker (OR)	Double circuit—138/69 kV	Rebuilt	Tubular	625/275
Malheur (OR)	Single circuit—500 kV	New	Lattice tower	2,500
Owyhee (ID)	Single circuit—500 kV	New	Lattice tower	2,500

Table Abbreviations: amps = amperes; ID = Idaho; kV = kilovolt; OR = Oregon.

3.2.12.5 AFFECTED ENVIRONMENT

NOISE

The existing ambient noise levels in eastern Oregon and western Idaho may be affected by the construction, operations, and decommissioning of the transmission line and ancillary facilities. Specifically, this section discusses the extent of the area and receptors that may be affected by noise generated by the B2H Project.

While the concept of sound is defined by the laws of physics, the term noise has further qualities of being excessive or loud. The perception of sound as noise is influenced by several technical factors, such as intensity, sound quality, tonality, duration, and the existing background levels. Noise is highly subjective and defined as unwanted sound. It is largely dependent on the magnitude (intensity) or duration of the noise; the distance from the noise source; and the time of day the incidence noise occurs (i.e., higher sensitivities will be expected during the quieter overnight periods).

Noise is usually expressed in decibels on the A-weighted scale (dBA), which corresponds to how humans hear sound. Depending on the magnitude, duration and amplitude of the noise and the sensitivity and distance of the receptor, the impact may be negligible, moderate or severe. Table 3-305 shows typical noise levels for common sources, expressed in dBA.

Table 3-305. Common Noise Levels

Noise Source or Effect	Sound Level (dBA[1])
Rock and roll band	110
Truck at 50 feet	80
Gas lawnmower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Notes: 1. Decibels (A-weighted)

Sources: USDOE 1986 and Lee 1996

Depending on local terrain and vegetation conditions, existing general levels of ambient audible noise levels in fair weather range from 20 to 40 dBA due to air movement through brush and trees. Higher levels of audible noise occur during precipitation events due to the noise of the rain on the ground and local vegetation. Local individual sources, such as animal calls or human activity, can also produce audible noise levels exceeding 60 dBA.

To take into account sound fluctuations, environmental noise is commonly described in terms of equivalent sound level (L_{eq}). The L_{eq} value, conventionally expressed in dBA, is the energy-averaged, A-weighted sound level over a measurement period. Another common noise descriptor used when assessing environmental noise is the day-night sound level (L_{dn}), which is calculated by averaging the 24-hour L_{eq} hourly levels at a given location and adding 10 dB to noise emitted during the nighttime period (10:00 p.m.–7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night. The L_{max} is the maximum instantaneous sound level measured during a specified time period. It can also be used to quantify the maximum instantaneous sound pressure level, such as that generated by equipment or an explosion.

IPC conducted an inventory of existing ambient sound levels at approximately 730 identified receptors along the proposed route and alternative routes. The location of the receptors, distance from the right-of-way, receptor types, and measured ambient noise levels at each receptor are presented in Table B.11-1 in Appendix B.11. Existing ambient sound levels are higher near major transportation corridors (i.e., Interstate 84, State Highway 26, and State Routes 203, 237, and 244) and in areas with higher population densities (e.g., Boardman, La Grande). There are also several rural airstrips and small airports in the vicinity, which contribute to ambient noise levels in both surrounding urban and rural areas. The open land, unincorporated areas, and communities that would intersect the proposed transmission line are predominantly open land or rural in nature, and are expected to have comparatively lower ambient sound levels. These lands range from very quiet with natural sounds such as birds, insects, wind effects as it passes through foliage and around objects, to louder motorized noise from off-road vehicle and recreational use, hunting, and other outdoor, commercial, and industrial activities.

Some meteorological conditions, such as foul weather, are favorable to sound propagation and conducive to corona noise generation that could periodically be audible outside the project right-of-way. Conversely, corona noise may be partially or fully masked by elevated ambient sound levels generated by rainfall events or ground-level winds. If ambient noise is very low, even a modest amount of wind can obscure the other noise sources and become the dominant ambient noise, particularly in areas with stands of mature trees.

ELECTRICAL ENVIRONMENT

Existing levels of radio interference and electric and magnetic fields are generally at ambient levels since there are no existing high-voltage transmission lines near (within 1,500 feet) the proposed route or alternative alignments. Exceptions occur where existing and proposed transmission lines converge at substations and where short portions of the 230-kV, 138-kV, 115-kV, and 69-kV lines run parallel to each other. This occurs in Morrow, Union, and Baker Counties. See Table 3-306 for a list of existing ambient levels of radio interference and electric and magnetic fields where there are no nearby existing transmission lines, as well as where there are existing nearby lines.

Table 3-306. Existing Ambient Levels

Electric Field (kV/m) [1]	Magnetic Field (mG) [2]	Radio Interference dB (1 µV/m) [3,4]
0.1 to 15-kV/m, Earth's static field <0.1-kV/m, AC electric field	500 to 600 mG, Earth's static field <1 mG, AC magnetic field	20 to 55 dB (1 µV/m), depending on season and atmospheric activity

Table Abbreviations: kV/m = kilovolt per meter; mG = milligauss; dB = decibel.

Table Notes: [1] Chalmers 1967. [2] National Oceanic and Atmospheric Administration 2011. [3] EPRI 1982. [4] New England Hydro Transmission Corporation 1985.

Existing fields are essentially the static natural electric field of the earth, which is due to atmospheric conditions and can range from a few hundred volts per meter to kilovolts per meter, and the natural magnetic field of the earth, which is in the range of 500 to 600 milligauss; however, both of the fields are essentially static or slowly varying instead of oscillating 60 times per second (60 hertz) like alternating current AC fields associated with a typical AC power lines. Much of the area crossed by the proposed transmission line is open range and cultivated fields. Smaller areas of desert, forest, and scattered residential conditions also exist.

ELECTRIC AND MAGNETIC FIELDS

Electric and magnetic fields are associated with the operation of AC power lines or devices supplied with AC electricity. These fields describe properties of a location or point in space and its electrical environment, including the forces that would be experienced by a charged body in that space by virtue of its charge or the movement of charges. The voltage produces an electric field which increases as the voltage increases. The current produces a magnetic field, which increases as the current increases. Thus, wherever there is electric current flowing (including through any type of wiring), there is both an electric and a magnetic field.

The standard unit for measuring the strength of an electric field is volts per meter (V/m); however, with electric high-voltage transmission lines the unit typically given is in kilovolts per meter (kV/m). The unit in which magnetic field levels are measured is gauss or milligauss (in international publications, the standard unit is tesla or microtesla, where 1 microtesla = 10 milligauss). Electric and magnetic fields are characterized by the frequency at which their direction and magnitude oscillate each second. The fields produced by the use of electricity in the U.S. oscillate at a frequency of 60 cycles per second, or 60 hertz. Electric and magnetic fields collectively are sometimes referred to as EMFs, although the term *EMF* often applies only to magnetic field.

Typical sources of these fields include power lines (both transmission and distribution lines), home and office appliances, tools, building wiring, and currents flowing on water pipes. The importance of these sources to overall exposure varies considerably. For example, if a residence is very close, such as within 50 feet of a transmission line or even a distribution line (which runs near most residences), these sources could be the dominant but not necessarily the only source of magnetic fields in the home. Depending on the circumstances, other sources may be of equal or greater importance. For example, a random survey of 1,000 residences in the United States reported that currents flowing on water pipes and on other components of house grounding systems are twice as likely as outside power lines to be the source of the highest magnetic fields measured in homes (Zaffanella 1993).

Electric field levels depend primarily on the line's voltage; the higher the voltage on the line, the higher the electric field levels associated with that line. Little variation is expected with electric field levels from a power line because a line's voltage does not vary significantly. Conducting objects including fences, shrubbery, and buildings easily shield electric fields. Magnetic field levels depend primarily on the current, or load, flowing on the line; as electricity demand increases and the current on the line increases, the magnetic field levels associated with the line generally increase. The transmission of electric power at a higher voltage (e.g., at 500 kV) reduces the current flow on the line to a level below that required to transport the same amount of power over lower-voltage lines. Both electric and magnetic field levels decrease rapidly with distance from a distribution or transmission line (Figure 3-59).

3.2.12.6 Environmental Consequences

No Action Alternative

The Proposed Action and Alternatives would not be constructed or operated. The noise environment at the right-of-way and at noise-sensitive receptors would remain unchanged, subject to the effects of other non-project-related noise sources. In addition, no project-related changes in the electrical environment would occur.

Effects Common to All Alternatives

This section addresses noise effects and impacts to the electrical environmental associated with the Proposed Action construction, operation, and decommissioning activities. The electric and magnetic field effects and resulting environmental consequences of the Proposed Action and alternatives would be substantially similar, and so are described together in this section. To the extent there are differences in effects among the alternatives, those differences are described in Alternative-specific Effects.

CONSTRUCTION

Noise

Transmission line construction would generate periodically audible noise levels. Additional noise sources may include commuting workers and trucks moving material to and from the work sites. The construction equipment that would be used is similar to that used during typical public works projects and tree service operations (e.g., road resurfacing, storm-sewer installation, natural gas line installation, tree removal, etc.). Transmission line construction would occur sequentially, moving along the length of the project route, or in other areas such as near access roads, structure sites, conductor pulling sites, and staging and maintenance areas (Jackson et al. 1994). One new substation would also be constructed at the Grassland site. Overhead line construction is typically completed in the following stages, but various construction activities may overlap with multiple construction crews operating simultaneously:

- Site access, road construction, and preparation
- Installation of structure foundations
- Erecting of support structures
- Stringing of conductors, shield wire, and fiber-optic ground wire

Noise levels from overhead transmission line construction were evaluated using a screening-level, distance from the right-of-way analysis approach. The calculation methodology requires the input of the number and type of construction equipment by phase, as well as a typical noise-source level associated with that equipment, to determine the composite sound levels for standard distances of 50 and 1,000 feet. Table 3-307 shows the average sound generated for the construction equipment planned for each phase of the B2H Project, and the composite construction noise levels at 50 and 1,000 feet for each phase. The maximum noise level anticipated for construction equipment operation at 1,000 feet from the construction site is 60 dBA, which is below the 70 dBA limit specified in the Federal Highway Administration's Construction Noise Handbook (FHWA 2006).

Sixteen noise-sensitive receptors have been identified as located within 1,000 feet of the right-of-way for the Proposed Action; one for the Horn Butte Alternative; one for the Longhorn Alternative; and two for the Flagstaff Alternative. The comparison of the noise receptors for the proposed route and alternatives can be found in Table 3-311 and Table 3-312.

Table 3-307. Noise Levels by Transmission Line Construction Phase

Example Construction Equipment	Equipment Noise Level at 15 meters (50 feet), dBA	Composite Noise Level at 15 meters (50 feet), dBA	Composite L_{eq} Noise Level at 305 meters (1,000 feet), dBA
Construction Phase 1: Site Access and Preparation			
Bulldozer	86	85	51
Grader	82		
Roller—compactor	73		
Loader	78		
Water truck	80		
Dump truck	80		
Construction Phase 2: Installation of Structure Foundations			
Bulldozer	86	91	56
Loader	78		
Backhoe-loader	80		
Fork lift	80		
Mobile crane	82		
Mobile crane	82		
Auger rig	85		
Drill rig	87		
Compressor	81		
Pump	83		
Portable mixer	82		
Jackhammer	90		
Cement mixer truck	80		
Dump truck	80		
Slurry truck	80		
Specialty truck	75		
Water truck	80		
Construction Phase 3: Erecting of Support Structures			
Forklift	80	95	60
Mobile crane	82		
Compressor	81		
Flatbed truck	75		
Flatbed truck	75		
Water truck	80		
Heavy lift helicopter	95		

Example Construction Equipment	Equipment Noise Level at 15 meters (50 feet), dBA	Composite Noise Level at 15 meters (50 feet), dBA	Composite L_{eq} Noise Level at 305 meters (1,000 feet), dBA
Construction Phase 4: Stringing of Conductors, Shield Wire, and Fiber-Optic Ground Wire			
Tracked dozer	86	86	52
Backhoe-loader	80		
Compressor	81		
Line puller	81		
Mixed trucks	80		
Specialty truck	75		
Specialty truck	75		
Water truck	80		

Table Source: Title 23 CFR Part 772 (Procedures for Abatement of Highway Traffic Noise and Construction Noise); FHWA 2006; Bolt Beranek and Newman, Inc. 1977.

Table Abbreviations: dBA = A-weighted decibels; L_{eq} = equivalent sound level.

The noise impacts at specific noise-sensitive receptors from construction will depend on the type of equipment used, the mode of equipment operation, the length of time the equipment is in use, the amount of equipment used simultaneously, and the distance between the sound source and the receptor. These factors are expected to vary throughout the construction period, making the calculation of a specific received sound-level value at each receptor location difficult. Transmission line construction in the proximity of any single location would likely last a few days to one week, as construction activities move along the corridor. As a result, no single receptor would be exposed to elevated noise levels or vibrations for an extended period. Construction activities at the substations could last from several weeks to several months on an intermittent schedule. Construction equipment would be operated on an as-needed basis during this period.

Construction activities would occur for limited lengths of daytime hours as established by municipal bylaws or as specified under local zoning codes to minimize impacts at noise-sensitive receptors. In addition, the majority of construction activities would occur away from population centers; therefore, the potential for construction activities to result in temporary or periodic increases in ambient noise levels in the acoustic environment would be low. IPC will comply with established noise ordinances and suggested noise guidelines to reduce the potential for adverse noise impacts at noise-sensitive receptors. The subsequent sections discuss specific construction techniques, including blasting and rock breaking, implosive devices during conductor stringing, and helicopter operations.

Blasting and Rock Breaking

Blasting is a short duration event as compared to rock removal methods, such as using track rig drills, rock breakers, jack hammers, rotary percussion drills, core barrels, and/or rotary rock drills.

Modern blasting techniques include the electronically controlled ignition of multiple small-explosive charges in an area of rock 8/1,000 of a second apart, resulting in total event duration of approximately 3/10 of a second. The detonations are timed so the energy from individual detonations destructively interferes with each other, called wave canceling. As a result, very little of the kinetic energy is wasted as ground vibration and audible noise. Impulse (instantaneous) noise from blasts could reach up to 140 dBA at the blast location or over 90 dBA for noise-sensitive receptors within 500 feet. Five receptors have been identified as within 500 feet of the right-of-way for the proposed route; one receptor is within 500 feet of the Horn Butte right-of-way; and one receptor is within 500 feet of the Longhorn Alternative right-of-way.

The B2H Project 500 kV lattice tower foundations would typically be installed using drilled shafts or piers; however, if hard rock is encountered within the planned drilling depth, blasting may be required to loosen or fracture the rock to reach the required depth to install the structure foundations. Blasting locations will not be identified until an investigative geotechnical survey of the study area is conducted during the detailed design. However, areas where blasting may potentially take place have been identified on a geologic basis. As described in Section 3.2.1 Earth Resources, areas of shallow bedrock exist along the proposed route and route alternatives. Depth to bedrock varies considerably along the routes, ranging from 1 to 4 feet below ground to greater than 12 feet below ground. The number of potentially impacted noise-sensitive receptors would be determined on the basis of the geotechnical investigations as to where blasting may be required.

To minimize impacts from blasting, IPC would implement the following:

- Blasting plans will be prepared by the contracted blasting specialist, demonstrating compliance with all applicable state and local blasting regulations, including the use of properly licensed personnel and obtaining all necessary authorizations
- A project specific Blasting Plan that meets all State, and Federal requirements shall be approved by the appropriate agency prior to the start of field activities and executed appropriately for the project
- Prior to any detonation of explosives in the vicinity of existing facilities such as pipelines, dwellings, structures, overhead or underground utilities, farm operations, or public crossings, a minimum of 48 hours notice shall be given to IPC, the appropriate authorities, and the owners or operators of any facilities that may be affected by the blasting
- In the vicinity of other electrical lines, the Contractor shall use approved blasting procedures to minimize the potential hazard of a premature detonation due to induced currents

Implosive Devices

Compression or implosive devices are used to make connections between conductors, which is the current industry-preferred method in contrast to previously used conventional hydraulic compression fittings. The use of implosive devices would vary depending on what segment of the transmission line is under construction and the number of conductors per bundle. A three-conductor bundle (IPC 2011) is proposed for each phase, and there are three phases per 500kV circuit. At each single-circuit 500kV dead-end structure and in-line sections where reel ends need to be connected, 18 implosive dead-end sleeves (6 per phase, one for each of the three subconductors on each of the three phases, and on each side of the structure) would be required. Additionally, 18 compression or implosive sleeves would be required to fabricate and install the jumpers that connect the conductors from one side of the dead-end structure to the other, for a total of 36 sleeves for each single-circuit dead-end structure.

Broadband implosive device sound-source levels were provided by an equipment manufacturer's test report for a similar size charge for comparable implosive dead-end and sleeve compression connector technologies. An average sound-level measurement between 118 and 122 dBA at an approximate distance of 200 feet was reported (Pasini 2006). The duration of sound emitted from the detonation of an implosive device is short, ranging from approximately 210 to 360 milliseconds. Since the potential for noise startle effects at noise-sensitive receptors exists, the use of implosive devices would be limited to daytime periods. In addition, implosive sleeves are typically applied in series, allowing for multiple connections to be made simultaneously.

Helicopter Operations

Access roads to each tower site are generally required for construction, operation, and maintenance activities, but there may be areas where access roads are limited in width, grade, or availability and require assistance by helicopters during construction. Project construction activities that could be facilitated by helicopters may include the delivery of construction laborers, equipment, and materials to structure sites; structure placement; hardware installation; and wire-stringing operations. For areas where the terrain is rugged and hilly, it is anticipated that line-replacement activities would involve using helicopters and this would be the major source of audible noise during the construction phase. Heavy lift helicopters could be used to erect the single-circuit 500kV tower sections. Light-duty helicopters would be used during the stringing phase of construction. Helicopters generally fly at low altitudes; therefore, potential temporary increases to ambient sound levels would occur in the area where helicopters are operating, as well as along their flight path. The fly yards would be approximately 10 to 15 acres and sited at locations to permit a maximum fly time of 4 to 8 minutes to reach structure locations, typically at about 10-mile intervals. In addition to limited flight time, helicopter operations would be limited to daytime working hours.

Summary of Construction Noise Effects

The noise effects of construction of the proposed B2H Project would depend on the location of noise receptors with regard to the locations of the construction activities and a number of other variables. Proximity to the project right-of-way provides a broad generalization of the potential for construction noise effects. For the majority of the right-of-way, construction of the B2H Project would result in low adverse noise effects because of the lack of noise-sensitive receptors in close proximity (i.e., within 1000 feet) along these portions of the right-of-way, and the temporary and localized nature of noise that would be generated during the construction phase. There are, however, certain portions of the right-of-way where noise-sensitive receptors are located close to the right-of-way. One noise-sensitive receptor is located within the 50-feet range where noise from construction equipment could reach 90 dBA and is within the 200-feet range where noise from implosive devices could reach 122 dBA. That noise-sensitive receptor and four others are within the 500-feet range in which blasting noise could reach 90 dBA. Eleven additional noise-sensitive receptors are within 1,000 feet of the proposed B2H Project right-of-way, and could experience up to 60 dBA of temporary construction noise. Whether or not these noise levels would be reached depends on final geotechnical investigations and final engineering of the B2H Project.

To further reduce noise impacts to sensitive receptors, IPC will identify and provide a public liaison, prior to and during construction, to respond to concerns about construction noise. In addition, IPC will establish a toll-free hotline to receive questions or complaints and develop procedures to respond to callers.

Electrical Environment

During construction, the electric and magnetic field levels in the vicinity of the B2H Project would be at background or ambient levels since the proposed lines would not be energized, and are not near pre-existing transmission lines along most of the proposed B2H Project and alternative routes. Once the transmission lines are energized, the electric and magnetic field levels would increase and be present.

OPERATIONS

Noise

Transmission Line

The electrical breakdown of air caused by corona at the surface of a transmission line conductor is accompanied by a crackling, snapping, sputtering or humming sound. If there is sufficient corona activity on a high-voltage line from corona activity along a conductor it may be sufficient to produce discernible audible noise at the edge of the right-of-way. At lower system voltages (voltages below 230 kV), audible noise from the transmission-line conductors is typically not formally evaluated because of the very low levels of corona activity and correspondingly low occurrence of corona effects. For lines at higher voltages (345 kV and above) with higher conductor surface gradients, corona activity is more likely and audible noise more frequent, particularly in inclement weather, and is therefore taken into account in the design of the transmission line.

Noise generated by transmission lines typically contributes little to noise levels compared to other common sources, such as vehicles, aircraft, and industrial sources; however, with increasing transmission line voltages, audible noise produced by corona on transmission line conductors has become a concern. Audible noise from transmission lines occurs primarily in foul weather. In dry conditions, the corona sources are limited to insects, scratches, and vegetation. These sources are such that the corona threshold is barely exceeded and the audible noise generated is very low. Generally, the fair-weather audible noise of transmission lines cannot be distinguished from ambient noise at the edge of the right-of-way. Conversely, in wet conditions, water drops impinging or collecting on the conductors produce a large number of corona discharges, each of them creating a burst of noise.

IPC would implement the following design features to minimize corona:

- Use transmission line materials that have been designed and tested to minimize corona

- Use a bundle configuration and larger conductors to limit audible noise, radio interference, and television interference due to corona
- Maintain tension on all insulator assemblies to ensure positive contact between insulators, thereby avoiding sparking
- Exercise caution during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur

Consultation with Indian Tribes that consider portions of or the entirety of the project area to be part of their traditional use areas indicate that Tribes are concerned with the ambient noise that is produced from operation of the transmission line as it affects their ability to conduct practices related to their cultural traditions and religion.

The noise model results for B2H Project transmission line noise are presented in Appendix B.11, which shows the anticipated noise levels for identified receptors within the analysis area for the Proposed Action and alternatives. The modeled sound data are the anticipated B2H Project-generated noise levels, and are independent of the existing ambient sound at that location.

Substations

The principal operations noise sources in substations are transformers. No new transformers are expected to be installed at the Grassland or Hemingway substations as a direct result of the B2H Project.

While no transformers will be installed at the Grassland or Hemingway substations, 500-kV shunt reactor banks will be installed at each location. Shunt reactors contain components similar to power transformers but noise from shunt reactors is generated primarily from vibrational forces resulting from magnetic “pull” effects at iron-air interfaces. Also, unlike transformers, operation of shunt reactors is typically intermittent, operating when voltage stabilization is needed during load variation. The closest identified receptor to the existing Hemingway Substation is located approximately 1,088 feet from the substation fence line. At the proposed Grassland Substation, there are no receptors identified within a 0.5 mile of the line terminal. With the existing and new equipment (e.g., transformers) installed at the Hemingway and Grassland substations, addition of shunt reactor banks is expected to result in low impacts due to negligible increases in received sound levels at noise-sensitive receptors.

Summary of Operations Noise Effects

The ambient noise inventories and operations noise modeling suggest that 63 noise-sensitive receptors in the Proposed Action analysis area could experience project-related operational noise at noticeable levels (10 dBA above assumed rural ambient of 26 dBA, or over 50 dBA). Of these, two noise-sensitive receptors could experience operational noise levels above the 50 dBA limit set by Oregon noise rules. IPC may be required in the EFSC process to propose means to abate noise levels that exceed state noise rules. Overall, operational noise along the right-of-way would be low.

Electrical Environment

Electric Field

The Proposed Action and action alternatives would use three tower structures: a 500-kV single-circuit lattice structure, delta configuration (Figure 3-58); a 500-kV single-circuit H-frame structure (Figure 3-60); and a 138 kV/69-kV double-circuit single-shaft steel pole (Figure 3-62). When a double-circuit structure is proposed (Figure 3-62) the orientation (phasing) of the conductors in relation to each other would affect the resulting levels of the electric field, magnetic field, and radio interference. Phasing of all conductors of the two circuits is factored in the calculations (Phase Management). The phase of a particular conductor or conductor bundle is indicated as either A, B, or C and the order and phasing of the conductor bundles of a circuit that are used to calculate the electrical levels are indicated as ABC. ABC for a single horizontal circuit indicates that the left conductor bundle is phase A, the middle conductor bundle is phase B, and the right conductor bundle is phase C. CAB would indicate that the left conductor bundle is phase C, the middle conductor bundle is phase A, and the right conductor bundle phase is B.

Electric field profiles for each tower type at mid-span were calculated at a 1 meter height above ground (IEEE Standard 644-1994). The electric field profiles for the three tower types are plotted in Figure 3-59, Figure 3-61, and Figure 3-63; these profiles show the anticipated electric field in and adjacent to the right-of-way. The electric field was calculated at the point of minimum clearance between the lowest conductor and ground. This occurs at mid-span for level terrain. The conductor height used for the 500-kV lattice structure lines was 35 feet, 37 feet was used for the 500-kV lines using the H-frame structures, and 34 feet of ground clearance for the 138 kV/69-kV double-circuit configuration. The line height above ground increases as one moves from mid-span back toward the tower, which results in lower electric fields under the line. The electric field was calculated with a 10 percent overvoltage for 500-kV and 138-kV/69-kV lines.

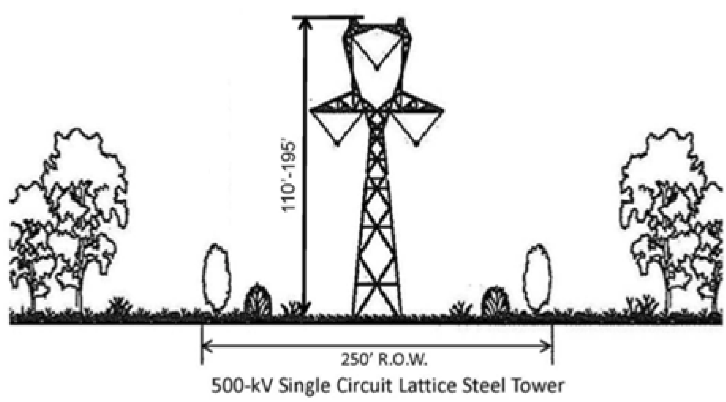


Figure 3-58. 500-kV Single-Circuit Lattice Steel Structure

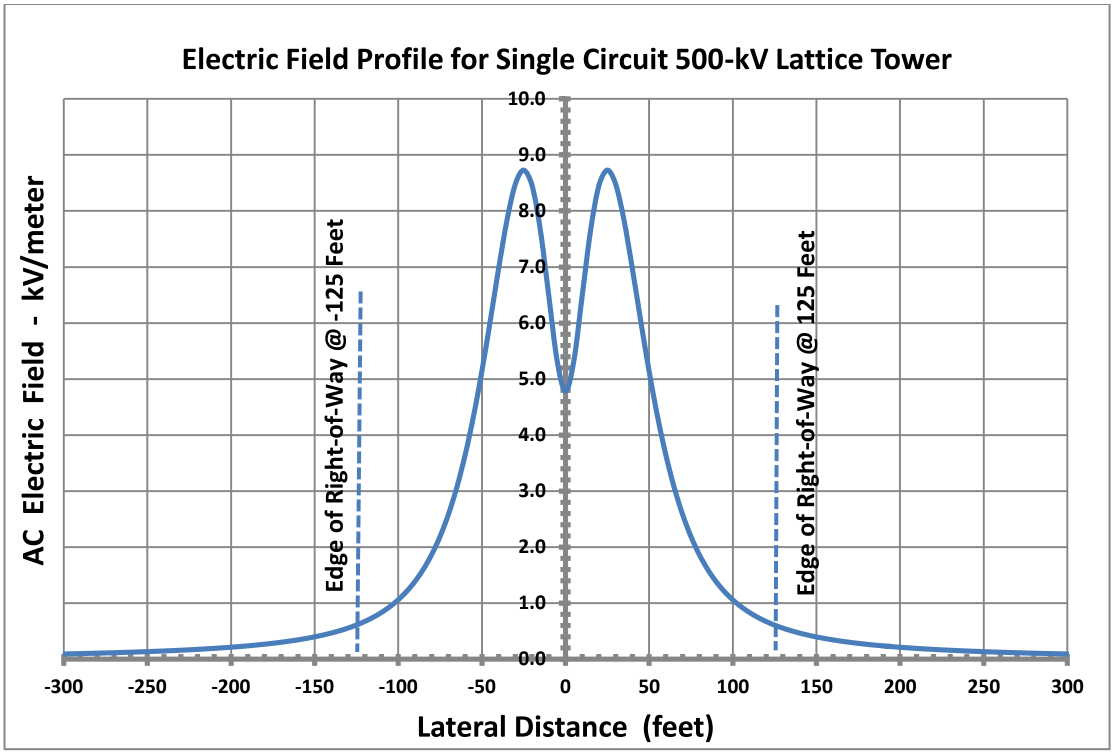


Figure 3-59. Electric Field Profile at Mid-span for 500-kV Lattice Structure

***Figure Note*: RMS Resultant Electric Field calculated at standard height of 1 meter and based on a mid-span clearance of 35 feet.**

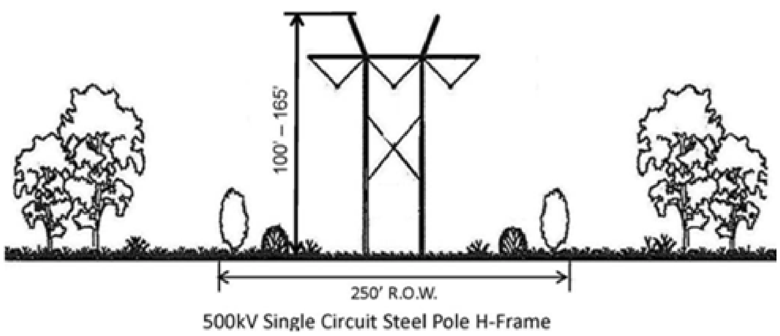


Figure 3-60. 500-kV Single-Circuit Steel Pole H-Frame Structures

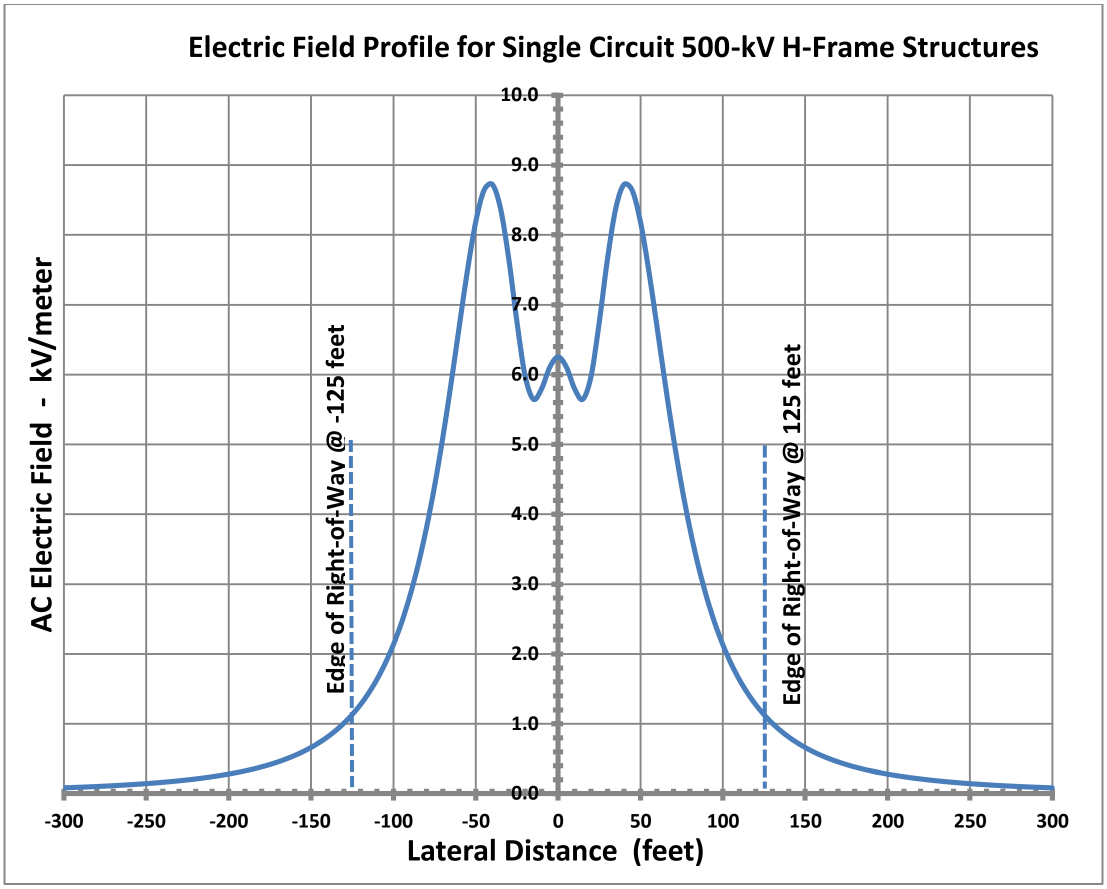


Figure 3-61. Electric Field Profile at Mid-span for 500-kV Single-Circuit H-Frame Structure

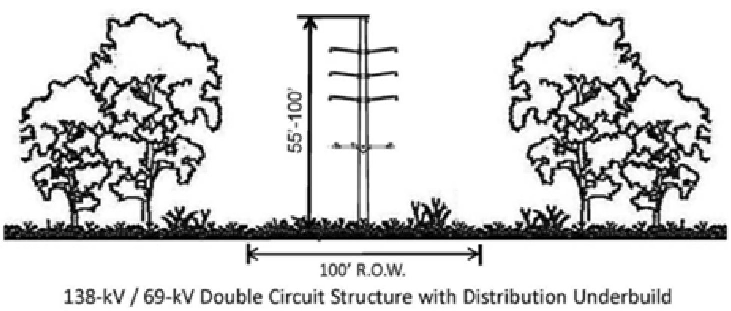


Figure 3-62. 138/69-kV Double-Circuit Tubular Steel Pole

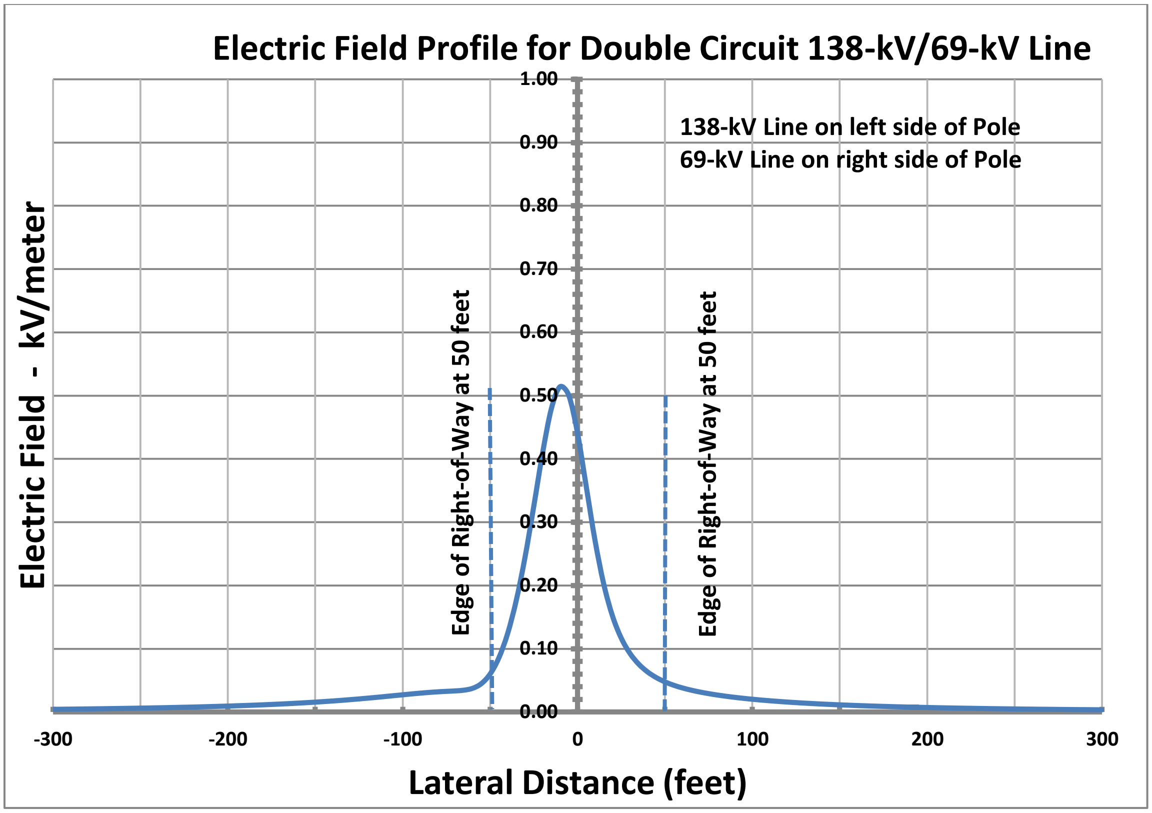


Figure 3-63. Electric Field Profile at Mid-span for Double-Circuit 138/69-Kv Single-Circuit Steel Pole Structure

The maximum modeled electric field within the right-of-way and at the edges of the right-of-way of the proposed B2H Project and alternatives is within the standards of the states. These include standards for high-voltage transmission lines, within BPA's guidelines for new transmission lines, and within the international guidelines summarized in Table 3-308.

Table 3-308. Electric fields within and at edges of Right-of-Way

Portion of Route [1]	ROW Width (feet)	South/West ROW Edge (kV/m)	Maximum within ROW (kV/m)	North/East ROW Edge (kV/m)
Morrow County (500 kV)	250	0.61	8.73	0.61
Umatilla County (500 kV)	250	0.61	8.73	0.61
Union County (500 kV)	250	0.61	8.73	0.61
Baker County (500 kV)	250	0.61	8.73	0.61
Baker County (138/69 kV)	100	0.06	0.51	0.06
Malheur County (500 kV)	250	0.61	8.73	0.61
Owyhee County (500 kV)	250	0.61	8.73	0.61
Tubular H-frame (500 kV)	250	1.13	8.72	1.13

Table General Note: RMS Resultant Electric Field at standard height of 1 meter in accordance with IEEE Standard 644-1994.

Table Notes: [1] Ground clearance: 35 feet for 500 kV lines with lattice tower structures; 37 feet for 500 kV lines with tubular H-frame structures; and 34 feet for 138/69 kV lines with single tubular poles structures.

The B2H Project is designed so that expected levels of electric and magnetic fields and radio noise as measured will be below accepted guidelines at the edge of the proposed rights-of-way. The maximum modeled electric field within the right-of-way and at the edges of the right-of-way of the Proposed Action and alternatives is within Oregon standards for high-voltage transmission lines, within BPA's guidelines for new transmission lines, and within the international guidelines summarized in Table 3-303. There are no established high-voltage transmission line standards for Idaho.

Magnetic Field

Once the transmission lines are energized, the AC magnetic fields would increase, and would vary hourly, daily and seasonally based on line loading and with peak values described in Table 3-309. The resultant magnetic field profiles at mid-span (point of closest approach of conductors to ground) were calculated for the three line types and are plotted in Figure 3-64, Figure 3-65, and Figure 3-66. The magnetic fields at the edges of the rights-of-way and the highest magnetic field found within the right-of-way for each of the line segments in the B2H Project are listed in Table 3-309. There are no established magnetic field standards for Idaho. The highest value of magnetic field calculated at the edge of the right-of-way was 68.3 milligauss, and this level was found where the 500-kV tubular H-frame structure is used. The highest magnetic field found within the right-of-way was 440 milligauss for the rights-of-way containing the 500-kV tubular H-frame structures. Table 3-309 provides expected levels of the magnetic field at various locations along the Proposed Action.

Table 3-309. Magnetic Fields (Peak Loading)

Portion of Route [1, 2]	ROW Width (feet)	South/East ROW Edge (mG)	Maximum within ROW (mG)	North/West ROW Edge (mG)
Morrow County (500 kV)	250	40.4	412	40.4
Umatilla County (500 kV)	250	40.4	412	40.4
Union County (500 kV)	250	40.4	412	40.4
Baker County (500 kV)	250	40.4	412	40.4
Baker County (138/69 kV)	100	8.4	21.5	4.5
Malheur County (500 kV)	250	40.4	412	40.4
Owyhee County (500 kV)	250	40.4	412	40.4
Tubular H-frame (500 kV)	250	68.3	440	68.3

Table General Note: RMF Resultant Magnetic Field at standard height of 1 meter.

Table Notes: [1] Peak loading: 2,500 amps/phase for 500-kV lines; 625 amps/phase for 138-kV line; 275 amps/phase for 69 -kV line. [2] Ground clearance criteria: 35 feet for 500-kV lattice structure lines; 37 feet for 500-kV tubular H-frame structures; and 34 feet for 138-kV/69-kV single tubular poles.

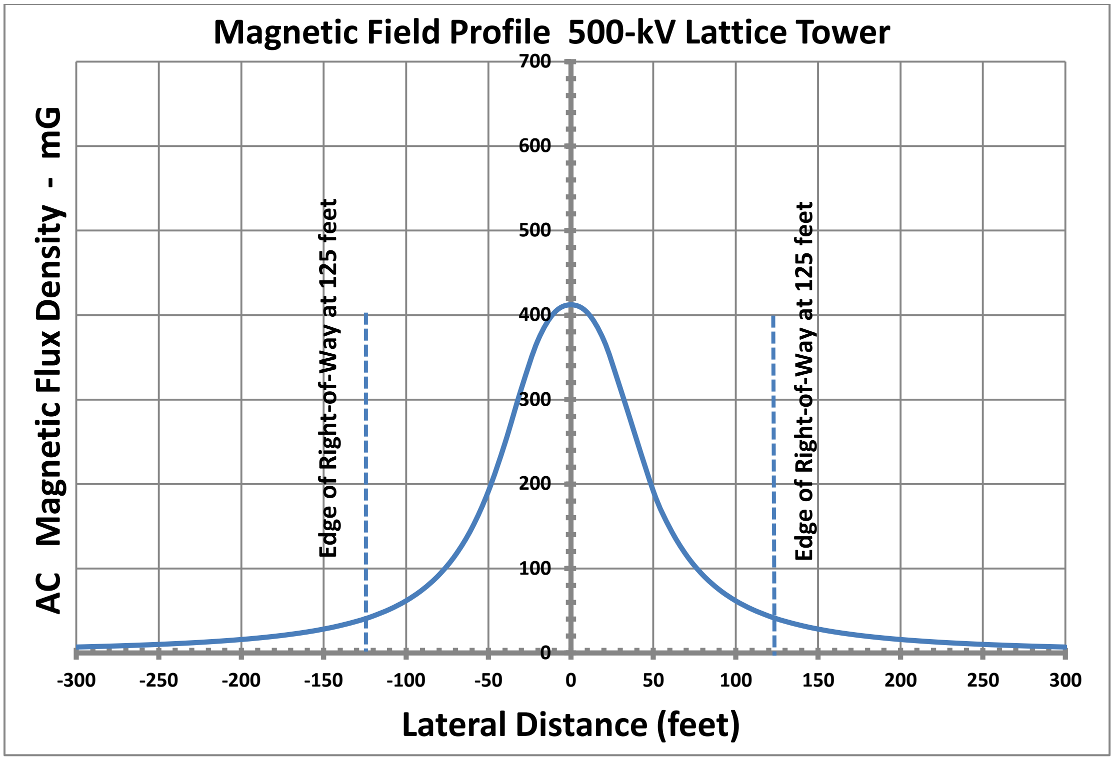


Figure 3-64. Magnetic Field Profile at Mid-Span for500-kV Single-Circuit Lattice Structure

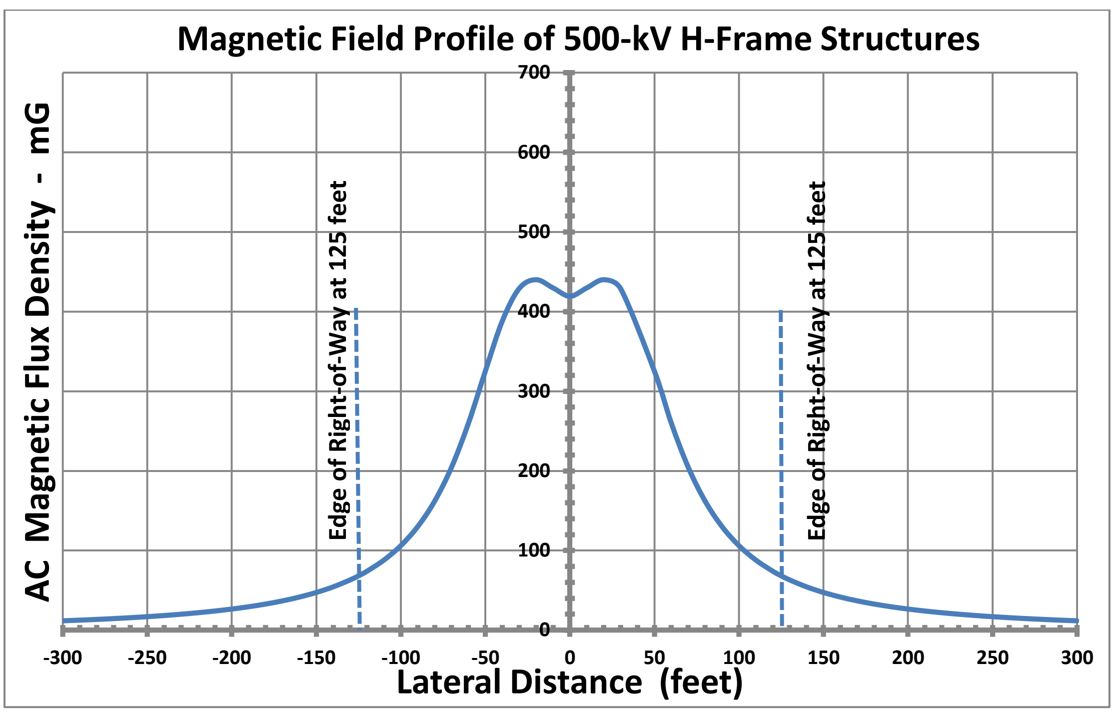


Figure 3-65. Magnetic Field Profile at Mid-Span for 500-kV Single-Circuit Tubular H-Frame Structure

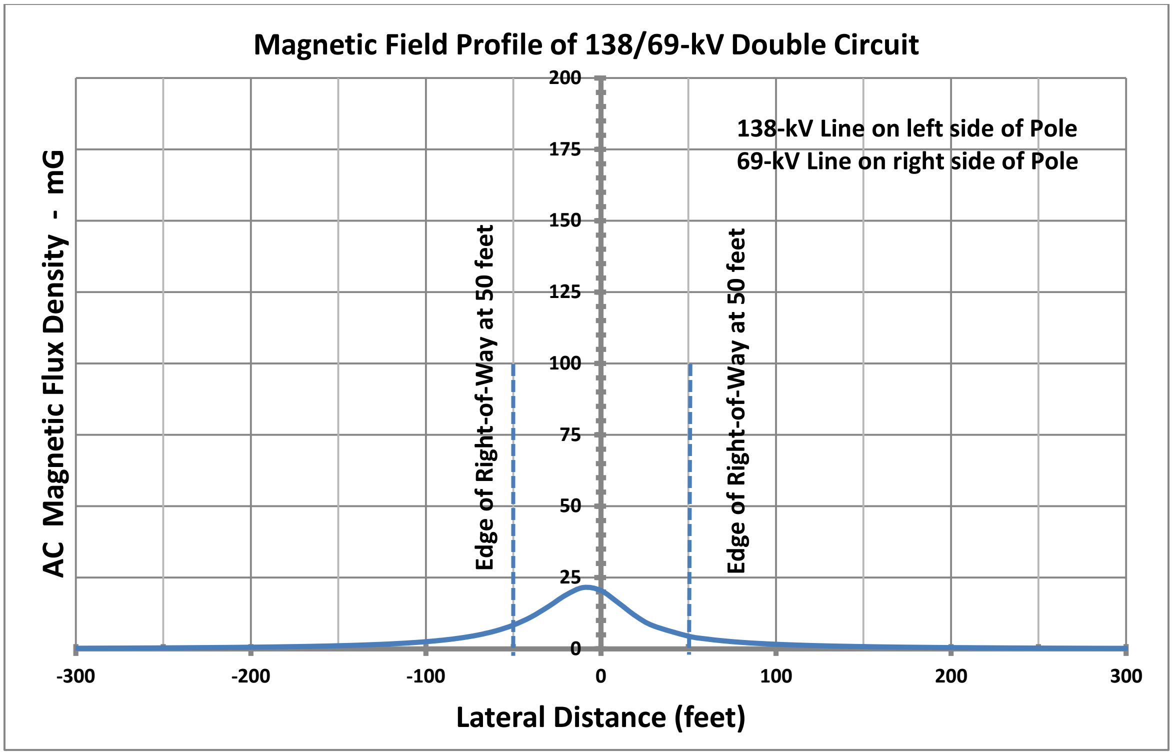


Figure 3-66. Magnetic Field Profile at Mid-Span for 138/69-kV Double-Circuit Tubular Pole Structure

Electric and Magnetic Field Effects

The electric and magnetic fields created by power transmission lines can create short term effects, generally perceived as nuisances such as induced currents or shocks. Concerns about long-term effects of EMF generally relate to human health concerns or effects on livestock, wildlife and nearby vegetation.

Field Induction (Induced Currents and Nuisance Shocks)

The electric fields associated with a transmission lines can cause voltages and/or currents to be induced (capacitive coupling) on otherwise un-energized conductive objects. Metallic roofs, vehicles, equipment, and fences are examples of objects that can develop a small electric charge when in proximity to high-voltage transmission lines. The induced voltage is a function of the transmission line voltage, the height of conductors, insulation between the object and ground, the characteristics and size of the object, and the electric field strength. An electric current can flow when an object has an induced charge and a path to ground. The induced voltage produces a short circuit current. The amount of induced current that can flow is important for evaluating the potential for nuisance shocks to people and the possibility of other effects such as fuel ignition.

Transmission line electric fields can also induce voltages and currents on people who are in the area or on a high voltage transmission line right-of-way. The magnitude of the induced voltage is a function of the line voltage, line geometry, the location of the person within the source electric field and the height and size of the individual. When the individual comes in contact with a grounded object, a short-circuit current will flow. This short circuit current or spark discharge may be described as an annoying or nuisance shock. These occasions can be characterized as similar to the “static shock” a person could receive from walking on a carpet during a dry weather period, and touching a grounded object. A notable difference is the AC induced voltages from transmission lines spark discharges can be recurring or continuous (EPRI 2005).

The threshold of perception of an electric current is approximately 1 milliampere for humans (Dalziel and Mansfield 1950). If the current is increased sufficiently beyond a person’s perception threshold, it can become bothersome and possibly startling. Larger currents can cause the muscles of the arm and hand to involuntarily contract so that a person cannot let go of an object. The value at which 99.5 percent of men, women, and children can still let go of an object is approximately 9, 6, and 5 milliamperes, respectively. The National Electrical Safety Code (2012) addresses this issue, limiting the steady-state current that can flow between an object and the earth near a transmission line to 5 milliamperes. This is considered to be a safe level.

Transmission lines are designed such that the maximum amount of current induced on the largest metallic object normally expected under the line would be less than 5 milliamperes. Nuisance shocks and induced currents can be eliminated by proper grounding of the object, shielding it from electric fields, or positioning it farther from the transmission line.

Although transmission lines are designed to limit induced currents on objects underneath the lines to a safe level, this level of current or the contact electric shock may still occur and be perceived when an object is contacted. This may be considered a nuisance depending on the magnitude of the current or shock. The peak electric field found under the 500-kV lines is sufficient that currents and potentials induced on vehicles and farm equipment operated within the right-of-way might be perceived. Most of the area under the Proposed Action and alternative lines has lower fields and only a small area under the 500-kV lines where the conductors come closest to ground near mid-span would be likely to induce perceivable currents or potentials on conductive objects such as vehicles or farm equipment.

The relation between short-circuit current and electric field for several vehicles and agriculture-related pieces of equipment has been measured and is listed in Table 3-310 (EPRI 2005). Multiplying the factors listed in Table 3-310 by the electric field yields the short-circuit current expected under conditions that are expected to produce the greatest magnitude short-circuit currents. The highest electric field calculated within the Proposed Action right-of-way and alternatives for the proposed B2H 500-kV lines was 8.73-kV/m. The vehicles and equipment listed in Table 3-310 would have short-circuit currents that are less than the 5-milliampere current required by the National Electric Safety Code (2012) except for the tractor-semitrailer where the induced current would be 5.6 milliamperes if the entire length of the tractor-semitrailer were in a 8.73-kV/m electric field (e.g., parallel to the line). Tractor-semitrailers would generally not be anticipated under the line except at line road crossings. At locations where large vehicles are anticipated, the line height would be increased as necessary (or the line design altered) so that the line complies with the 5-milliampere requirement of National Electric Safety Code Section 23 rules (2012).

Appropriate design practices for the 500-kV B2H Project, proper ground clearances, and acceptable electric field values on and at the edge of the right-of-way minimize electric field induction problems. In addition, proper grounding practices for conductive objects on and at the edge of right-of-way would reduce annoying and nuisance shocks.

Table 3-310. Induced Current Factors

Object	Induced Current Coefficient I_{SC}/E (mA per kV/m)
Car L 4.6m x W 1.78 m x H 1.37 m	0.088
Pickup truck L 5.2 m x W 2.0 m x H 1.7m	0.10
Tractor-semitrailer (40-foot trailer) L 15.75 m x W 2.4 m x H 3.7m	0.64
Farm tractor pulling crop wagon (9.55-m total length)	0.30

Table Abbreviations: L = length; W = width; H = height; I_{SC} = short-circuit current; E = AC electric field; mA/kV = milliampere per kilovolt.

Radio Interference

Radio interference occurs when the 60-hertz electric fields at the surface of a power line conductor (conductor surface gradient) is above a certain critical value to cause a local breakdown in the insulating properties of the air. This electrical breakdown of the air or ionization of the air, at the surface of the conductor is called a *corona*. Corona discharges in general can produce electromagnetic interference to radio and TV reception. If there is sufficient corona activity, radio and TV interference can be noticeable within a few hundred feet of the transmission line, and small amounts of ozone and nitrous oxide can be released. These effects are most pronounced directly underneath the line conductors and decrease with distance from the transmission line.

The impulsive corona activity can cause wide-band electric and radio interference. This radio interference spans the frequency spectrum from below 100 kilohertz to approximately 1,000 megahertz. Inclement weather and high altitude increase radio interference levels. This activity from transmission lines can produce electromagnetic interference to an AM broadcast band (535–1605 kilohertz) signal such as a commercial AM radio audio signal. FM radio stations and the audio portion of a TV station signal (which is also frequency modulated) are generally not affected by interference from a transmission line. Radio interference is measured in decibels based on its field strength referenced to a signal level of 1 microvolt per meter. Existing ambient levels of radio noise are created by atmospheric activity and are approximately at 30 to 40 decibels (dB) (1 microvolt per meter in fair weather at 1 megahertz), depending on the season and amount of storm activity. Radio interference resulting from operation of the B2H Project is anticipated to be low and can be remedied as needed on a case-by-case basis (Appendix C).

Figure 3-67, Figure 3-68, and Figure 3-69 show the anticipated radio interference profiles at mid span (conductor closest to the ground) for the 500-kV lattice towers, 500-kV H-frame towers, and the 138/69-kV towers.

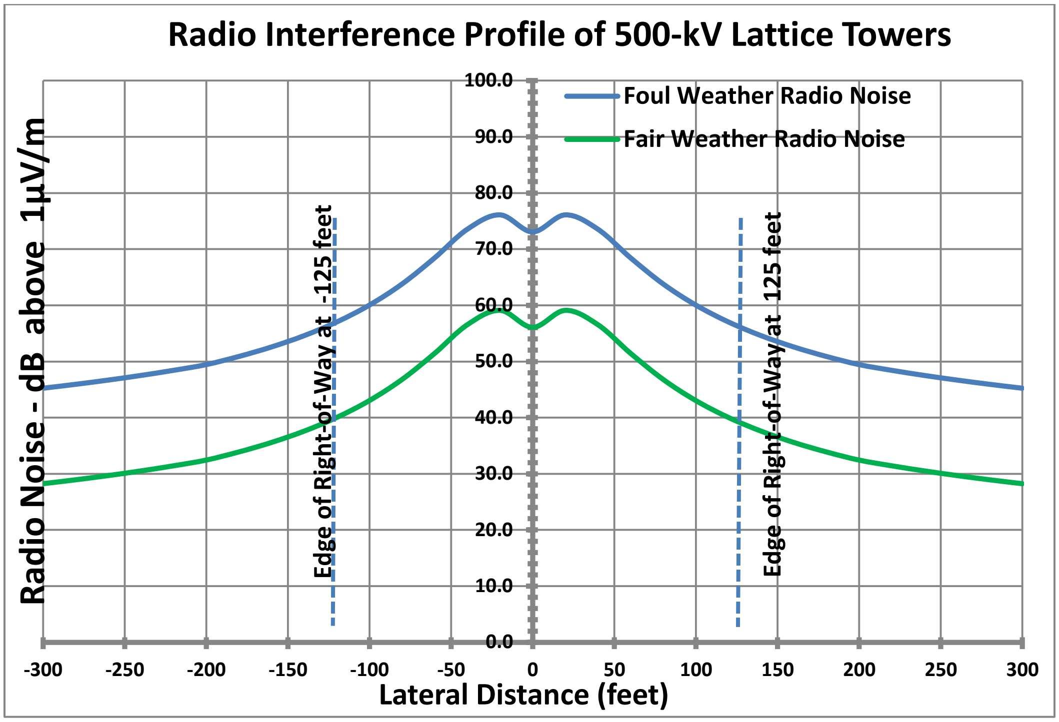


Figure 3-67.Radio Noise Profile at Mid-Span for 500-kV Single-Circuit Lattice Structure

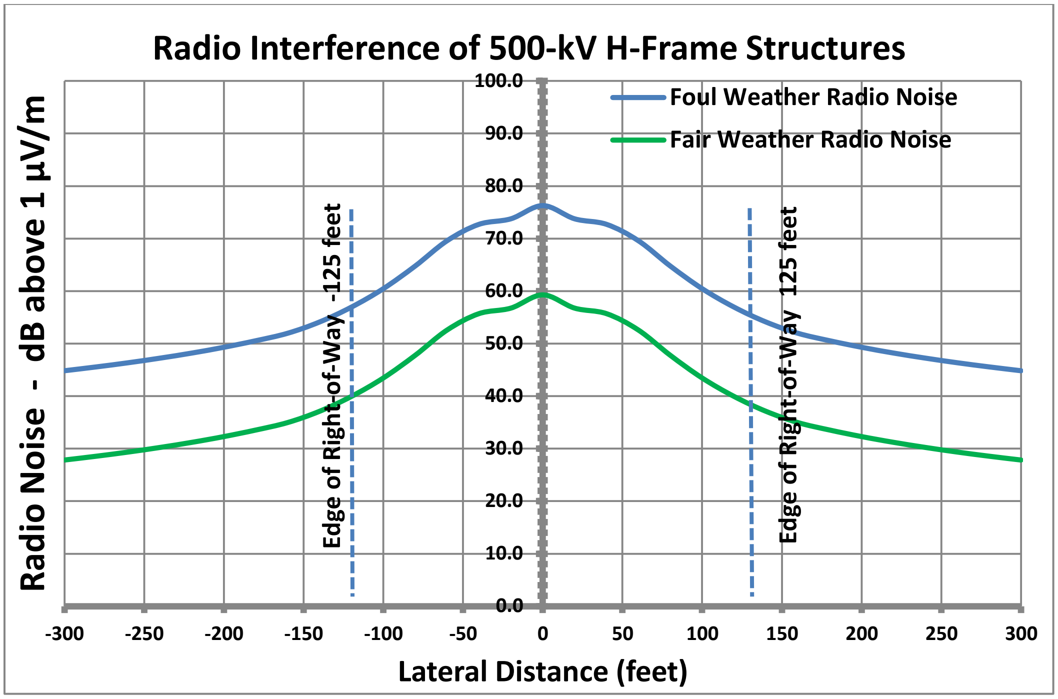


Figure 3-68. Radio Noise Profile at Mid-Span for Single-Circuit 500-kV Tubular H-Frame

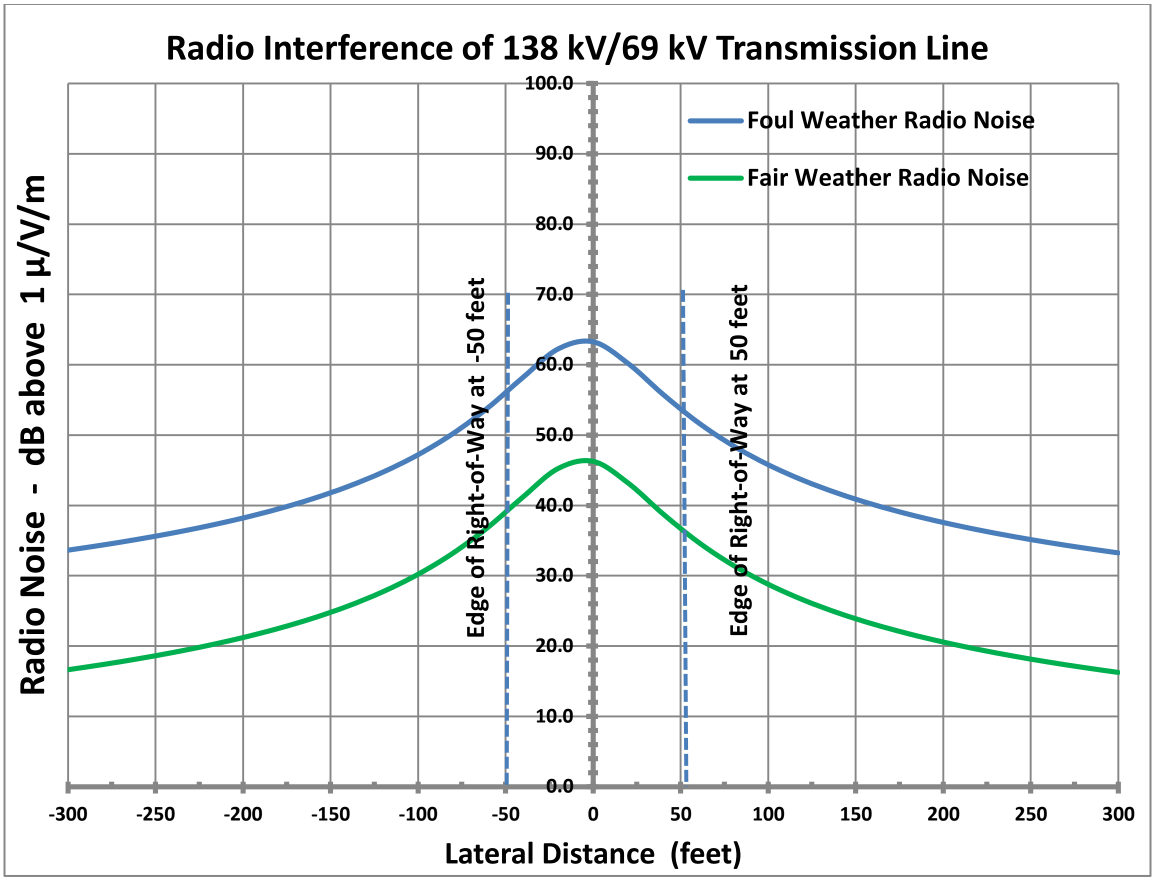


Figure 3-69. Radio Noise Profile at Mid-Span for 138/69 -kV Transmission Line

Television Interference

Corona activity associated with high voltage power lines has produced television signal interference issues at lower channels (Channels 2-6, 54-88 mHZ). Historically, customers' reception problems have been addressed and satisfied with remedial measures to correct the interference. Today, television customers have greater choices such as cable and satellite systems and conversions to digital TV. Television interference is anticipated to be low and, if necessary, can be remedied on a case-by-case basis (Appendix C).

Magnetic Field Effects

Magnetic fields can cause distortion of the image on older style video display terminals and computer monitors (cathode-ray tubes). The threshold magnetic field for interference depends on the type and size of monitor and the frequency of the magnetic field. Interference has been observed for certain monitors at fields at or below 10 milligauss (Baishiki et al. 1990; Banfai et al. 2000). The problem typically arises when cathode-ray tube computer monitors are in use near electrical distribution or transmission facilities in large office buildings. This is becoming less of a concern with the introduction of flat screen monitors, such as laptop computers. Flat screen monitors are not susceptible to distortion from AC magnetic fields. Some specialized equipment (for instance, certain medical equipment such as a magnetic resonance imaging machine or test equipment such as a scanning electron microscope) may be sensitive to even lower levels of magnetic field. However, equipment that is very sensitive to magnetic fields typically has shielding and is installed in a protected environment, to shield them from the magnetic fields of 1 to 10 milligauss or higher that can be found in buildings due to their wiring, lights, and other equipment. Magnetic field effects would be low based on newer technologies that are not susceptible to distortion.

Electromagnetic Interference to GPS Satellite Receivers and Cell Phones

GPS units, satellite receivers, cell phones, and community communication systems typically operate at high frequencies in the tens to hundreds of megahertz or even into the gigahertz range. These systems also frequently use FM or digital coding of the signals so that they are relatively immune (superior signal-to-noise ratio) to the electromagnetic interference from transmission line corona.

Mobile phones operate in the radiofrequency range of about 0.8 to 1.9 megahertz or higher frequencies. Electric and magnetic fields at these high frequencies have very different physical characteristics from 60-hertz power frequency electric and magnetic fields. Due to the frequencies used by these devices and the modulation and processing techniques used, interference effects would below.

GPS units are used in a wide range of activities including several important agricultural activities in the analysis area such as monitoring pivot irrigation, tracking wheeled and tracked equipment movements during farming operation, and checking the orientation of aerial spraying aircraft. Modern guidance systems have an accuracy of 1 to 2 inches. Comments from local farmers indicate that power lines can interfere with these GPS guidance systems, making them less accurate, being off from 1.5 to 4.5 feet. If so, inefficiencies could result in wasted fuel, increased labor costs, and under-or over-fertilizing resulting in reduced productivity. GPS units operate in the frequency range of 1.2 to 1.6 gigahertz. Tests with satellite receivers operating at frequencies from 3.4 gigahertz to 7 gigahertz have shown no effect from transmission lines unless the receiver was trying to view the satellite through the transmission tower or the conductor bundle of the transmission line. Repositioning the receiver by a few feet was sufficient to eliminate the obstruction and reduced signal.

IPC reports that they do not specifically track reports of interference with GPS tractor navigation systems. However, in the Magic Valley area which is a region in south-central Idaho, these systems are widely used and there are several existing transmission lines up to 500-kV crossing the area. They report that over the last 10 years they have not been contacted about interference with tractor GPS navigation systems. Users of these systems have expressed concerns about the possibility of interference, but no specific examples have been reported (IPC 2010). As a result, interference effects to GPS units would be low.

Electromagnetic Interference to Cardiac Pacemakers

Electric and magnetic fields from a variety of sources, including some industrial equipment, automobile ignition wiring, anti-theft devices in stores, magnetic resonance imaging machines, slot machines, cell phones, and certain medical procedures (e.g., radiation therapy, electrocautery and defibrillation), have been reported to affect the operation of implanted cardiac pacemakers and defibrillators. In theory, pacemaker interference from the electric fields associated with high-voltage transmission lines might be possible depending upon the type of pacemaker, the person's location and orientation under the conductors of the transmission line, and the voltage and design of the transmission line. However, the opportunities for exposure and interference from power lines are lower than for contact with ordinary household appliances.

Due to recent design improvements, many pacemakers in use would not be particularly susceptible to electrical fields. There remains a small possibility that some pacemakers, particularly those of older designs, and with single-lead electrodes, may sense potentials induced on the electrodes and leads of the pacemaker and provide unnecessary stimulation to the heart.

There are two general types of pacemakers: asynchronous and synchronous. The asynchronous pacemaker pulses at a predetermined rate. It is practically immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker, on the other hand, pulses only when its sensing circuitry determines that pacing is necessary. Interference resulting from transmission line electric or magnetic fields can cause a spurious signal in the pacemaker's sensing circuitry. However, when these pacemakers detect a spurious signal, such as a 60-hertz signal, they are programmed to revert to an asynchronous or fixed pacing mode of operation and return to synchronous operation within a specified time after the signal is no longer detected.

The potential for pacemaker interference depends on the manufacturer, model, and implantation method, among other factors. Studies have determined thresholds for interference of the most sensitive units to be about 2,000 to 12,000 milligauss for magnetic fields and about 1.5 to 2.0-kV/m for electric fields. The magnetic fields from the transmission lines are well below these values, even for the peak magnetic field of 440 milligauss found on the right-of-way (see Table 3-309). The electric fields expected at the edges of the right-of-way (1.13-kV/m or less; see Table 3-308) are below the threshold level of 1.5-kV/m for the most sensitive pacemaker. The proposed transmission lines would not have an effect on pacemakers outside the right-of-way.

Human Health Effects of EMF

For more than 30 years, there have been questions and concerns that exposure to power frequency electric and magnetic fields from power lines may be a potential human health effect. Early studies focused on electric fields because electric fields can produce physiological effects beneath electric high voltage transmission lines, for example, hair stimulation. However in recent years this concern has diminished. Overall, electric fields studies did not find evidence of biological changes that could lead to adverse health effects (EPRI 2008). Magnetic fields began receiving increased attention in the late 1970s. A substantial amount of research has been conducted in the United States and around the world over the past several decades examining whether exposures to power frequency magnetic fields have health or environmental effects.

Epidemiology studies have addressed many of the issues raised about electric and magnetic fields and health effects. Epidemiology is that branch of medical science that studies the patterns, distribution and possible causes of diseases in human populations. The objective of epidemiology is to identify agents in the environment that may potentially be causing a disease and then to develop methods of prevention. Epidemiology draws its conclusions from an observational methodology of the diseases in the natural environment; it is not a laboratory study. Consequently epidemiology has unique strengths and limitations. The strength of epidemiology is that it draws its conclusion from humans in their natural environment and avoids the problem of extrapolating cellular or animal research where the appropriateness of the models is frequently questioned. The weakness of epidemiology research provides less conclusive evidence when compared to laboratory research and suffers from the limitation of direct proof of a cause-and-effect relationship (Horton and Goldberg 1995).

EMF and health effects studies are a very large and complex body of research material to objectively assess. Fortunately there have been numerous major reviews of the total body of scientific research on EMF performed by independent advisory groups composed of scientists from a wide variety of disciplines with expertise or knowledge in EMF. These expert groups include the National Research Council (NRC 1997, 1999), National Institute of Environmental Health Sciences (NIEHS 1998, 1999), the International Agency for Research on Cancer (IARC 2002), the National Radiological Protection Board of Great Britain (NRPB 2001, 2004), the Health Council of the Netherlands (HCN 2001, 2004), and the International Commission on Non-Ionizing Radiation Protection (ICNIRP 2001, 2009) have included dozens of scientists with diverse skills that reflect the different research approaches required to answer questions about health. These multidisciplinary reviews express the consensus in the scientific community that the epidemiologic evidence is insufficient to demonstrate a causal relationship between ELF-EMF and any health effect. Summary conclusions from these organizations are excerpted below:

National Institute of Environmental Health Sciences (NIEHS 1999)

> The scientific evidence suggesting that ELF-EMF exposures pose any health risk is weak. The strongest evidence for health effects comes from associations observed in human populations with two forms of cancer: childhood leukemia and chronic Lymphocytic leukemia in occupationally exposed adults. While the support from individual studies is weak, the epidemiological studies demonstrate, for some methods of measuring exposure, a fairly consistent pattern of a small, increased risk with increasing exposure that is somewhat weaker for chronic lymphocytic leukemia than for childhood leukemia. In contrast, the mechanistic studies and the animal toxicology literature fail to demonstrate any consistent pattern across studies although sporadic findings of biological effects have been reported. No indication of increased leukemias in experimental animals has been observed.
>
> The lack of connection between the human data and the experimental data (animal and mechanistic) severely complicates the interpretation of these results. The human data are in the “right” species, are tied to “real life” exposures and show some consistency that is difficult to ignore. This assessment is tempered by the observation that given the weak magnitude of these increased risks, some other factor or common source of error could explain these findings. However, no consistent explanation other than exposure to ELF-EMF has been identified.

Epidemiological studies have serious limitations in their ability to demonstrate a cause and effect relationship whereas laboratory studies, by design, can clearly show that cause and effect are possible. Virtually all of the laboratory evidence in animals and humans and most of the mechanistic work done in cells fail to support a causal relationship between exposure to ELF-EMF at environmental levels and changes in biological function or disease status. The lack of consistent, positive findings in animal or mechanistic studies weakens the belief that this association is actually due to ELF-EMF, but it cannot completely discount the epidemiological findings.

The NIEHS concludes that ELF-EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. The conclusion of this report is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the United States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. The NIEHS does not believe that other cancers or noncancer health outcomes provide sufficient evidence of a risk to currently warrant concern.

National Research Council (NRC 1999)

An earlier Research Council assessment of the available body of information on biologic effects of power-frequency magnetic fields (NRC 1997) led to the conclusion ‘that the current body of evidence does not show that exposure to these fields presents a human health hazard. Specifically, no conclusive and consistent evidence shows that exposure to residential electric and magnetic fields produces cancer, adverse neurobehavioral effects, or reproductive and developmental effects’. The new, largely unpublished contributions of the EMF-RAPID program are consistent with that conclusion. NAS concludes that no finding from the EMF-RAPID program alters the conclusions of the previous NRC review on the Possible Effects of Electromagnetic Fields on Biologic Systems (NRC 1997). In view of the negative outcomes of EMF-RAPID replication studies, it now appears even less likely that MFs [magnetic fields] in the normal domestic or occupational environment produce important health effects, including cancer.

National Radiological Protection Board of Great Britain (NRPB 2001, 2004)

Laboratory experiments have provided no good evidence that ELF-EMF are capable of producing cancer, nor do human epidemiological studies suggests that they cause cancer in general. There is, however, some epidemiological evidence that prolonged exposure to higher levels of power frequency magnetic fields is associated with a small risk of leukemia in children. In practice, such levels of exposure are seldom encountered by the general public in the UK [or in the US]. (2001)

Because of the uncertainty… and in absence of a ‘dose-response’ relationship, NRPB has concluded that the data concerning childhood leukemia cannot be used to derive quantitative guidance on restricting exposure. It is concluded that currently the results of these studies on EMFs and health, taken individually or as collectively reviewed by expert groups, are insufficient either to make a conclusive judgment on causality or to quantify appropriate exposure restrictions. (2004)

Health Council of the Netherlands (HCN 2001, 2004)
Because the association is only weak and without a reasonable biological explanation, it is not unlikely that it [an association between ELF exposure and childhood leukemia] could also be explained by chance… The committee therefore sees no reason to modify its earlier conclusion that the association is not likely to be indicative of a causal relationship. (2001)

"The Committee, like the IARC itself, points out that there is no evidence to support the existence of a causal relationship here. Nor has research yet uncovered any evidence that a causal relationship might exist. (2004)

International Agency for Research on Cancer (IARC 2002)
Studies in experimental animals have not shown consistent carcinogenic or co-carcinogenic effects of exposures to ELF [extremely low frequency] magnetic fields, and no scientific explanation has been established for the observed association of increased childhood leukemia risk with increasing residential ELF magnetic field exposure." IARC categorized EMF as a "possible carcinogen" for exposures at high levels, based on the meta-analysis of studies of statistical links with childhood leukemia at levels above 3-4 mG.

International Commission on Non-Ionizing Radiation Protection (ICNIRP 2009)
The restrictions in these guidelines were based on established evidence regarding acute effects; currently available knowledge indicates that adherence to these restrictions protect workers and members of the public from adverse health effects from exposure to low frequency EMF. The epidemiological and biological data concerning chronic conditions were carefully reviewed and it was concluded that there is no compelling evidence that they are causally related to low-frequency EMF exposure.

The assessments by International Agency for Research on Cancer, the National Research Council, the National Institute of Environmental Health Sciences, the National Radiological Protection Board of Great Britain, the Health Council of the Netherlands, and the International Commission on Non-Ionizing Radiation agree that there is little evidence to suggest ELF-EMF is associated with adverse health effects, including most forms of adult and childhood cancer, heart disease, Alzheimer's disease, depression, and reproductive effects. Nevertheless, all agree that the experimental laboratory data do not support a causal link between EMF and any adverse health effect, including leukemia, and have not concluded that EMF is, in fact, the cause of any disease.

The Oregon Department of Energy's assessment of EMF is also consistent with the EMF assessments by international and other U.S. agencies discussed above. The following is an excerpt from the Executive Summary of Oregon's EMF Report (Golder Associates 2009):

> Research into harmful effects associated with EMF exposure has been in the form of both epidemiological studies (investigating the incidence of disease in a population, compared with incidence of environmental exposures, such as EMF), and laboratory studies involving animals or cells. Some epidemiological reports suggest EMF exposure is associated with several health issues, including certain cancers, neurological diseases, heart disease, and miscarriage. However, other epidemiological studies are unable to demonstrate an association between EMF exposure and these conditions. At the time of this report, no clear biochemical or biomagnetic mechanism leading to a negative health effect has been universally proposed or supported, although many specific proposed rationales exist. Laboratory research investigating EMF is almost universally unable to demonstrate a link between extremely low frequency EMF exposure and negative human or animal health effects. It is the view of many researchers and reviewing bodies that the lack of supporting laboratory data weakens the plausibility of a causal link between environmental EMF exposure and health effects.

Effects of EMF on Tribal Cultural and Religious Practices

Although no adverse human health effects of EMF have been documented, the presence of EMF is reported, through consultation with the BLM, to be of concern to tribes that report that areas in which EMF is present are rendered unsuitable for cultural and religious practices. To the extent that the B2H Project is located in areas that are considered to be of traditional use to tribes, the operation of the project could render those areas not useful for those purposes.

EMF Effects to Wildlife and Livestock

The exposure of animals to electric and magnetic fields has also been investigated for over 30 years. Vegetation in the form of grasses, shrubs, and small trees largely shields small ground-dwelling species such as mice, rabbits, foxes, and snakes from electric fields. Species that live underground, such as moles, woodchucks, and worms, are further shielded from electric fields by the soil. Aquatic species are shielded from electric fields by water. Large species such as deer and domestic livestock have greater potential exposures to electric fields since they can stand taller than the surrounding vegetation. However, the duration of exposure for deer and other large animals is limited to foraging bouts or the time it takes them to cross under the line. All species would be exposed to higher magnetic fields under or near a transmission line than elsewhere, because vegetation and soil do not provide shielding from this aspect of the transmission-line electrical environment.

Field studies have been performed to monitor the behavior of large mammals in the vicinity of high-voltage transmission lines. No effects of electric or magnetic fields were evident in two studies from the northern U.S. on big game species, such as deer and elk, exposed to a 500-kV transmission line (Goodwin 1975; Picton et al. 1985).

Much larger populations of animals that might spend time near a transmission line are livestock that graze under or near transmission lines. To provide a more sensitive and reliable test for adverse effects than informal observation, scientists have studied animals continuously exposed to EMF from high-voltage lines in relatively controlled conditions. For example, grazing animals such as cows and sheep have been exposed to high-voltage transmission lines and their reproductive performance examined (Lee et al. 1996). No adverse effects were found among cattle exposed to a 500-kV direct-current overhead transmission line over one or more successive breeding events (Angell et al. 1990). Compared to unexposed animals in a similar environment, the exposure to 50-hertz fields did not affect reproductive functions or pregnancy of cows (Algers and Hennichs 1985; Algers and Hultgren 1987). Sheep and cattle exposed to EMF from transmission lines exceeding 500-kV were examined and no effect was found on the levels of hormones in the blood, weight gain, onset of puberty, or behavior (Stormshak et al. 1992; Lee et al. 1993; Lee et al. 1995; Thompson et al. 1995; Burchard et al. 1998; Burchard et al. 2004).

Greenberg et al. (1981) studied honeybee colonies placed near 765-kV transmission lines. They found that hives exposed to AC electric fields of 7-kV/m had decreased hive weight, abnormal amounts of propolis (a resinous material) at hive entrances, increased mortality and irritability, loss of the queen in some hives, and a decrease in the hive's overall survival compared to hives that were not exposed. Placing the hive farther from the line, shielding the hive, or using hives without metallic parts eliminates this problem.

EMF Effects to Vegetation

A number of studies have been carried out to assess the effect of exposure of plants to transmission-line electric and magnetic fields. These studies have involved both forest species and agricultural crops. Researchers have found no adverse effects on plant responses, including seed germination, seedling emergence, seedling growth, leaf area per plant, flowering, seed production and germination of the seeds, longevity, and biomass production (Lee et al. 1996).

Research has been performed examining if electric and magnetic field exposure have affected plant growth and crop production. Scientific evidence does not exist that fields produced near electric high voltage transmission lines have a negative impact on plant life and growth. A study of 60-hz electric fields on living plans concluded that 30 to 50 kV/m exposures to plants does not have a measurable effect on economic yield or plant life (McKee 1985). Another study concluded that crops, such as corn oats, and soybeans were unaffected by electric fields up to 16-kV/m (Hodges and Mitchell 1979).

Visible Corona

Corona discharges in air are sometimes visible as a faint bluish glow near the conductors on high-voltage lines. Any corona on the conductors would be visible by human eyes only under the darkest conditions and after the eyes had time to adapt to nighttime levels. Corona cameras are now available that can enhance the ability to see corona activity on conductors and hardware that can identify the location of the source. Knowing the source of disruptive corona activity can assist remediation if the corona activity is causing other problems.

Ozone

Small amounts of ozone and other oxidants can be produced around the conductors when there is corona present. Ozone accounts for the majority of the oxidants, with nitrous oxide accounting for the remainder. Ozone is a naturally occurring part of the air with levels of 10 to 30 parts per billion (ppb) at night in rural areas, increasing during daylight to approximately 70 to 100 ppb. Ozone levels exceeding 100 ppb can be found in urban areas and cities. Ozone is also produced by many common appliances such as copy machines, battery chargers, air fresheners, and welding equipment. The ozone levels from a 500-kV line are typically at the single digit ppb level, well below the environmentally prescribed level of 120 ppb by the EPA. The ozone from the high-voltage lines is at the limit of ozone detection equipment and well below even the fluctuations of ambient levels and would not affect the ambient air quality.

ALTERNATIVE-SPECIFIC EFFECTS

The noise effects of the B2H Project for all of the alternatives will be substantially similar to the effects described for the Proposed Action, except that different noise-sensitive receptors are present along the alternative alignments.

CONSTRUCTION

Noise

Table 3-311 identifies the number of noise-sensitive receptors within the stated distances from the Proposed Action and alternatives. Each distance category includes receptors that are closer than the stated distance. For example, there is one receptor within 50 feet of the Proposed Action right-of-way. That receptor is also reported as within 200 feet, 500 feet, and 1,000 feet, and so would be subject to the potential for noise levels shown for each of the distance categories. The receptors shown for each alternative are in addition to the receptors for the Proposed Action. For example, none of the alternatives increase the number of noise-sensitive receptors within 50 feet of the transmission line right-of-way, but the Longhorn Alternative adds one receptor within 500 feet of the right-of-way.

Similar to the Proposed Action, construction of the alternatives would result in low adverse noise effects along the right-of-way because of the lack of noise-sensitive receptors within 1,000 feet of the right-of-way and the temporary and localized nature of noise during the construction phase. However, for those portions of the right-of-way where noise-sensitive receptors are located close to the right-of-way, the temporary and short-term construction-related noise at these noise-sensitive receptors would be considered moderate. However, given the relatively small number of noise-sensitive receptors within 1,000 feet of the Proposed Action and alternatives, the temporary nature of the construction activities, and the ability to limit noise-producing activities primarily to daylight hours, noise effects from construction of the Proposed Action and all the alternatives are anticipated to be low.

Table 3-311. Number of Noise-Sensitive Receptors within Noise Distance Limits for Construction Activities for the Proposed Action and Alternatives

Alternative	50 feet of ROW (equipment noise, 95 dBA)	200 feet of ROW (implosive devices, 122 dBA)	500 feet of ROW (blasting noise, 90 dBA)	1,000 feet of ROW (equipment noise, 60 dBA)
Proposed Action	1	1	5	16
Morrow-Umatilla Segment				
Horn Butte Alternative	0	0	1	1
Longhorn Alternative	0	0	1	1
Longhorn Variation	0	0	0	0
Blue Mountains Segment				
Glass Hill Alternative	0	0	0	0
Baker Valley Segment				
Timber Canyon Alternative	0	0	0	0
Flagstaff Alternative	0	0	0	2
Burnt River Mountain Alternative	0	0	0	0
Brogan Area Segment				
Tub Mountain South Alternative	0	0	0	0
Willow Creek Alternative	0	0	0	0
Malheur Segment				
Malheur S Alternative	0	0	0	0
Malheur A Alternative	0	0	0	0
Double Mountain Alternative	0	0	0	0

Table Abbreviations: dBA = A-weighted decibels; ROW = right-of-way.

OPERATIONS

Noise

Table 3-312 summarizes the results of the transmission line operations noise analysis from which a comparison by alternatives can be developed regarding the potential for adverse impacts. Actual ambient noise levels vary with location and contribution of sound sources. Table 3-312 lists the number of noise-sensitive receptors at which the modeled project-generated operational noise would exceed the assumed rural ambient noise level of 26 dBA. The modeling results are independent of the existing acoustic environment and represent project-generated sound levels only. The threshold for determining whether the increased noise at outdoor locations associated with human receivers is noticeable is the lower of the following two values: (1) the measured pre-project ambient noise level at the location plus 10 dBA or (2) the 50 dBA absolute nighttime noise limit at the appropriate measurement location established by Oregon State noise rules (OAR 340-035-0035).

Appendix B.11 presents the results of the inventory of ambient noise at identified receptors within the analysis area of the Proposed Action and alternatives. Results presented include the measured sound level by receptor location and type. Additional information, such as the closest right-of-way milepost and the distance and direction from the transmission line route, is also provided.

Table 3-312 also shows the number of noise-sensitive receptors that the modeling suggests will experience above-background noise levels as a result of operations of the B2H Project. The alternatives are compared to the portion of the Proposed Action that each alternative would replace. For example, the "Proposed Action Compared to Horn Butte Alternative" line shows those receptors affected by the Proposed Action that would be replaced by the Horn Butte Alternative. The "Horn Butte Alternative" line shows only those receptors that would be affected if the Horn Butte Alternative were selected.

Table 3-312. Number of Noise-Sensitive Receptors at Modeled Noise Levels within the Operations Analysis Area of the Proposed Action and Alternatives

Route Name	County	30–35 (dBA)	35–40 (dBA)	40–45 (dBA)	45–50 (dBA)	≥50 (dBA)	≥36 (dBA)
Proposed Action (Segment 1)	Morrow	4	0	0	1	0	1
Proposed Action (Segment 1)	Umatilla	10	3	2	0	0	4
Proposed Action (Segment 2)	Union	9	5	1	0	0	4
Proposed Action	Baker	8	8	4	0	0	11
Proposed Action	Malheur	2	0	0	0	0	0
Proposed Action	Owyhee	4	2	0	0	0	2
Proposed 138/69kV Rebuild	Baker	2	1	3	0	5	9
Total Proposed Action		39	19	10	1	5	31
Proposed Action and Alternative Comparisons							
Proposed Action Compared to Horn Butte Alternative	Morrow	3	0	0	1	0	1
Horn Butte Alternative	Morrow	3	0	0	1	0	1
Proposed Action Compared to Longhorn Alternative	Morrow	3	0	0	1	0	1
Longhorn Alternative	Morrow	1	0	0	1	0	1
Longhorn Variation	Morrow	3	2	0	0	0	0
Proposed Action Compared to Glass Hill Alternative	Union	2	0	0	0	0	0
Glass Hill Alternative	Union	0	0	0	0	0	0
Proposed Action Compared to Timber Canyon Alternative	Baker	4	4	0	0	0	3
Timber Canyon Alternative	Union/Baker	10	5	5	2	0	11
Proposed Action Compared to Flagstaff Alternative	Baker	0	0	0	0	0	0
Flagstaff Alternative including 230kV Rebuild	Baker	2	5	0	1	0	4
Burnt River Mountain Alternative	Baker	2	1	1	2	0	4
Proposed Action Compare to Tub Mountain South Alternative	Baker/Malheur	2	0	0	0	0	0
Tub Mountain South Alternative	Baker/Malheur	16	2	2	0	0	4

Route Name	County	30–35 (dBA)	35–40 (dBA)	40–45 (dBA)	45–50 (dBA)	≥50 (dBA)	≥36 (dBA)
Proposed Action Compared to Willow Creek Alternative	Baker/Malheur	2	0	0	0	0	0
Willow Creek Alternative	Baker/Malheur	5	1	0	0	0	1
Proposed Action Compared to Malheur S Alternative	Malheur	0	0	0	0	0	0
Malheur S Alternative	Malheur	0	1	0	0	0	1
Proposed Action Compared to Malheur A Alternative	Malheur	0	0	0	0	0	0
Malheur A Alternative	Malheur	0	1	0	0	0	1
Double Mountain Alternative	Malheur	0	0	0	0	0	0

Table Abbreviations: dBA = A-weighted decibels.

Overall, 5 noise-sensitive receptors would experience operations noise levels greater than 50 dBA, a level between the sounds of rainfall on leaves and a normal indoor conversation. Thirty-one noise-sensitive receptors would experience noise levels above 36 dBA, a level comparable to a refrigerator. Noise effects of the operation of the Proposed Action and the alternatives are anticipated to be low

3.2.12.7 Mitigation Planning

In addition to the construction and operation standards, other mitigation measures would be included that reduce the potential for stray voltage. For example, perceived currents or potentials on vehicles or farm equipment can be mitigated if they occur by using a ground strap on the vehicle or equipment, or by avoiding stopping the vehicle or equipment while under the lines. Since a spark and current may occur between objects under the line if the objects are not properly connected and grounded, refueling a vehicle while it is under the line should also be avoided.

3.3 CUMULATIVE EFFECTS

This section addresses the cumulative effects associated with the B2H Project that would result when combined with other past, present, and reasonably foreseeable future actions. The following discussion includes a general definition of cumulative effects, cumulative effects analysis methodology, past, present and reasonably foreseeable future actions, and the results of the assessment of cumulative effects by resource. The analysis of cumulative effects by resource includes past, present, and reasonably foreseeable future actions and the incremental impacts of the B2H Project.

3.3.1 DEFINITION

Cumulative impact as defined in Code of Federal Regulations is "…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 actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). Further the BLM Handbook (1790-1) states that: "The purpose of cumulative effects analysis is to ensure that Federal decision-makers consider the full range of consequences of actions (the proposed action and alternatives, including the No Action alternative).

3.3.2 METHODOLOGY

The cumulative effects methodology considered scoping and project issues presented in Chapter 1; cumulative effect time frames; resources that could be effected by the alternatives; the geographical area in which the effects would occur; and other past, present, and reasonably foreseeable future actions that have, or could be expected to cause, impacts on these resources. "Reasonably foreseeable future actions" are proposed projects or actions that have applied for a permit from local, state, or federal authorities or which are publicly known.

For the purposes of this analysis, the temporal extent of the projects to be considered would be the expected physical operational service life of this project. Past and present events and projects would be generally identified and the ongoing effects that are similar to those for the B2H Project are discussed. Land uses described as past or present are considered in the baseline conditions of the affected environment in Chapter 3 (Section 3.2.6). Past and present activities considered in the cumulative effects analysis include agriculture; land development; energy projects, mineral extraction, linear transportation and utility corridors, military operations and recreation.

3.3.2.1 GEOGRAPHIC AND TEMPORAL SCOPE OF ANALYSIS

The BLM NEPA Handbook H-1790-1 (2008) recommends that geographic (spatial) and time (temporal) boundaries be established for cumulative effects analysis. The B2H Project "footprint" or direct construction ground disturbance extent is described in Chapter 2. The cumulative effects analysis area varies by resource because the extent of direct and indirect effects of the B2H Project would vary by resource. Table 3-313 shows the cumulative effects analysis areas for resources affected by the B2H Project. In some cases, the cumulative effects analysis area for a resource is larger than the project-specific analysis area in order to consider an area large enough to encompass likely effects from other projects on the same resource.

The temporal scope of the cumulative effects analysis is the duration of the life of the B2H Project, including construction, and operation. The temporal scope includes consideration of short-term and long-term effects. Short-term effects cease following an activity of specific duration (such as facility construction) or result in conditions that are capable of being restored to pre-project functionality within a relatively short amount of time. For purposes of this Draft EIS, the timeframe for short-term effects is 3 years, based on a 3-year construction schedule and 6 months for post-construction reclamation. Long-term effects are a result of ongoing activities or impacts that persist for long periods of time. For the purposes of this Draft EIS, it is assumed that long term direct and indirect effects would persist for 50 years which is the initial term of the right-of-way grant. Permanent effects result in a permanent change in condition or function for the resource being addressed. Permanent effects for the B2H Project would be those persisting longer than 50 years.

Table 3-313. Cumulative Impact Analysis Area

Resource	Cumulative Impact Analysis Area	Rationale for Area
Earth Resources		
Soils	Sensitive soil areas (highly erodible, droughty soils, areas of shallow bedrock) within 0.5 mile of the Proposed Action and alternative centerlines and within 50 feet of the centerline of access roads.	Direct and indirect impacts to soils would be restricted to areas within and adjacent to the project disturbed areas.
Minerals Resource Extraction	Areas of active resource extraction for minerals, oil, and gas that are crossed by Proposed Action and alternative centerlines.	Direct and indirect Impacts to mining of minerals and oil and gas extraction operations would be limited to areas crossed by project infrastructure. Effects to the states' mineral and oil and gas industries are discussed in Social and Economic Conditions.
Paleontology	Areas of high (3+) potential fossil yield crossed by the Proposed Action and alternative centerlines and by access roads.	Direct and indirect effects would be limited to the outcrop areas of formations with high potential fossil yield.
Water Resources		
Water Resources and Floodplains	The watersheds (4th level HUCs) of waterbodies crossed by the direct and indirect analysis areas of the Proposed Action and alternative centerlines and by access roads with impacts in or adjacent to the affected waterbody.	Impacts from the project may affect areas lower in the watershed. All projects in the watershed need to be considered for effects on water quality.
Wetlands	Mapped wetland and riparian areas up to 0.5 miles from the Proposed Action or alternatives and within 50 feet of the centerline of access roads.	Direct and indirect impacts to wetlands would occur within or adjacent to the project footprint. No affected wetlands or riparian areas extend farther than 0.5 mile from the project centerlines.
Vegetation Resources		
Vegetation (general)	Areas within 0.5 mile of the Proposed Action and alternative centerlines.	Covers the analysis area for direct and indirect effects to vegetation.
Noxious Weeds	Counties crossed by the Proposed Action and alternative centerlines.	Area in which introduction or spread of invasive plant species from this Project could interact with weeds already present or introduced or spread by other projects. The county is the political unit where weed control is required and regulated.
Vegetation (special status) species)	Areas within 5 miles of the Proposed Action and alternative centerlines.	Covers the analysis area for direct and indirect effects to special status plants.

Resource	Cumulative Impact Analysis Area	Rationale for Area
Wildlife Resources		
Big game wintering and parturition habitat	Mapped extent of herd unit areas of crucial wintering and parturition crossed by the Proposed Action and alternative centerlines and by access roads.	Area of potential critical stress for ungulate populations.
Mammals	Areas within 0.5 miles of the Proposed Action and alternative centerlines and within 50 feet of access road centerlines.	Direct and indirect effects would occur near the project footprint. Potential habitat for affected mammals would be within 0.5 miles of the direct and indirect effects areas.
Amphibians and reptiles, including Columbia spotted frog	Mapped riparian and wetland polygons within 0.5 mile of the Proposed Action and alternative centerlines and access road centerlines.	Potential habitat.
Greater Sage-Grouse	Preliminary Priority Habitat (PPH), Preliminary General Habitat (PGH) and restoration habitat polygons that are crossed by the Proposed Action and alternative centerlines and access roads, plus areas within 11 miles of known Greater Sage-Grouse leks that are located within 5 miles of the Proposed Action and alternative centerlines and access roads.	Areas most recently mapped and published by ODFW and IDFG as crucial to the protection and recovery of Greater Sage-Grouse. This distance is required for cumulative effects analysis by the BLM Instructional Memorandum.
Washington ground squirrel	Areas of suitable habitat within 5 miles of Proposed Action and alternative centerlines and access road centerlines.	Direct and indirect effects would occur near the project footprint. Potential habitat for affected animals would be within 5 miles of the project centerlines.
Migratory birds	Areas within 0.5 mile of the Proposed Action and alternative centerlines.	Reasonable distance beyond which construction or operations of this or other projects is unlikely to disturb nesting birds.
Bald Eagle and Golden Eagle	Known locations of eagle nests and suitable winter roosting habitat within 10 miles of the Proposed Action and alternative centerlines.	Reasonable distance beyond which construction or operation of this or other projects is unlikely to disturb nesting birds.
Fish		
Fish – General, including sensitive, MIS	Sub-basins (4^{th} level HUCs) crossed by the Proposed Action and alternative centerlines and by access roads.	Extent of habitat that could be affected
Middle Columbia River steelhead – ESA threatened	Sub-basins (4^{th} level HUCs) that contain Middle Columbia River steelhead crossed by the Proposed Action and alternative centerlines and access roads.	Extent of Critical Habitat that could be affected
Snake River Basin steelhead – ESA threatened	Sub-basins (4^{th} level HUCs) that contain Snake River Basin steelhead crossed by the Proposed Action and alternative centerlines and access roads.	Extent of Critical Habitat that could be affected

Resource	Cumulative Impact Analysis Area	Rationale for Area
Snake River Chinook, spring/summer run – ESA threatened	Sub-basins (4th level HUCs) that contain spring/summer run Snake River Chinook crossed by the Proposed Action and alternative centerlines and access roads.	Extent of Critical Habitat that could be affected
Bull trout – ESA threatened	Sub-basins (4th level HUCs) that contain bull trout crossed by the Proposed Action and alternative centerlines and access roads.	Extent of Critical Habitat that could be affected
Land Use, Agriculture, Recreation, Transportation		
Agriculture - Irrigated	Irrigated farming areas within 0.5 miles of the Proposed Action and alternative centerlines, access roads and ancillary facilities.	Direct and indirect effects to agricultural operations would occur near the project footprint within the analysis area.
Agriculture – Tree farms	Tree farms within 0.5 miles of the Proposed Action and alternative centerlines, access roads and ancillary facilities	Direct and indirect effects to agricultural operations would occur near the project footprint within the analysis area.
Agriculture – Dairies and CAFOs	Dairies and CAFOs within 0.5 miles of the Proposed Action and alternative centerlines, access roads and ancillary facilities	Direct and indirect effects to agricultural operations would occur near the project footprint within the analysis area.
Agriculture – Dryland farming	Dryland farming areas within 0.5 miles of the Proposed Action and alternative centerlines, access roads and ancillary facilities	Direct and indirect effects to agricultural operations would occur near the project footprint within the analysis area.
Agriculture - Grazing	Grazing areas on private lands within 0.5 miles of the Proposed Action and alternative centerlines, access roads and ancillary facilities; grazing allotments on federal and state lands crossed by the centerlines, access roads and ancillary facilities.	Direct and indirect effects to private lands grazing would occur near the project footprint within the analysis area. Effects to federal and state lands grazing in the context of existing grazing allotments.
Recreation	BLM: Resource Management Plan Areas crossed by the Proposed Action and alternative centerlines and access roads. Forest Service: National Forests crossed by the Proposed Action and alternative centerlines and access roads. State Lands crossed by the Proposed Action and alternative centerlines and access roads. Private: Counties and municipalities crossed by the Proposed Action and alternative centerlines and access roads.	Level at which land use regulations, plans, or authorizations are in effect.
Transportation	Air: Airports within 3 miles of the Proposed Action and alternative centerlines and access roads. Roads: Service areas of roads to be used for B2H project construction and operations.	Airport distance defined by controlled airspace; cumulative effects to traffic on roads in the project area.

Resource	Cumulative Impact Analysis Area	Rationale for Area
Visual Resources		
Visual Resources	Areas within 10 miles from the Proposed Action and alternative centerlines.	Although views can and do extend beyond 10 miles, the 10-mile distance was chosen because it is near the limit of visibility of skylined transmission towers that may be noticeable to casual observers and beyond that the Proposed Action and alternatives would have negligible if any contribution to cumulative visual resources impacts.
Cultural Resources		
Cultural Resources	Area for direct cumulative impact analysis is defined as the 500 ft. transmission line corridor, a 100 ft. corridor centered on existing and new access roads, and a 250 ft. buffer surrounding staging areas, borrow areas, substations, and other construction areas. Area for indirect cumulative impact analysis is defined as five miles on either side of the transmission center line or the visual horizon, whichever is closer, based on the area of potential effects (APE) established in the project programmatic agreement (PA).	Area where direct cumulative impacts associated with use of ROW and/or access roads could occur includes the proposed maximum ROW width (500 feet) and a buffer for direct effects and the area from which this Project could be viewed for visual impacts. Area where indirect cumulative impacts stemming from construction and operation of the facility is defined as the viewshed from historic properties in which setting, feeling and association are key aspects of integrity. The project APE establishes that area.
National Historic Trails		
National Historic Trails	Areas within 10 miles from the Proposed Action and alternative centerlines.	Although views can and do extend beyond 10 miles, the 10-mile distance was chosen because it is near the limit of visibility of skylined transmission towers that may be noticeable to casual observers and beyond that the Proposed Action and alternatives would have negligible if any contribution to cumulative impacts to the National Historic Trails and Study Trails.
Air Quality and Climate Change		
Air Quality and Climate Change	Air quality control regions crossed by the Proposed Action and alternative centerlines and access roads and ancillary facilities.	To provide an understanding of current air quality in Oregon and Idaho, to identify present projects that contribute to air quality degradation and climate change, and to understand how the electric generation carried by the Boardman to Hemingway and other transmission lines, present and proposed, contribute to air quality and climate change issues.

Resource	Cumulative Impact Analysis Area	Rationale for Area
Socioeconomics and Environmental Justice		
Socioeconomics	Counties crossed by Proposed Action and alternative routes; plus cities within 50 miles of the Proposed Action and alternative centerlines. Also, each Census Tract, Block, and Group crossed by project centerlines.	Corresponds with the direct and indirect socioeconomic analysis area and includes the constituent municipalities and potentially affected populations.
Environmental Justice	Counties and Census Block Groups crossed by the Proposed Action and alternative routes.	Corresponds with the direct and indirect environmental justice analysis area.
Public Health and Safety		
Noise	During construction the area is 1,000 feet from construction noise sources. During operation, the areas are the width of the right-of-way.	Areas beyond which no noise from construction or operation of Boardman to Hemingway would be detectable above USEPA recommended levels.
Electrical Environment	The right-of-way width in areas occupied by people (permanently or temporarily, as in recreation sites) crossed by the Proposed Action and alternative centerlines, access roads, and ancillary facilities.	Electrical effects, including magnetic field and stray voltage, do not occur beyond the ROW. Construction and operation of the transmission line may affect the health and safety of people.

3.3.3 Projects or Actions with Potential for Cumulative Effect with the B2H Project

Projects within the resource cumulative effects analysis areas with potential to add to the direct and indirect effects of the B2H Project were considered. Those projects most likely to cause cumulative effects are those that have effects similar to those of the B2H Project since they tend to impact all the same resources across multiple jurisdictions in ways similar to those of the B2H Project. Other projects also affect one or more resources and are considered together with the effects from the B2H Project. For ease of analysis, projects with the potential for cumulative effects are presented in the following categories:

- Agriculture, including dryland farming, irrigated agriculture and grazing;
- Land development for residential, commercial and industrial uses;
- Other transmission lines in or near the B2H Project area;
- Other linear projects in or near the B2H Project area, such as roads, canals and pipelines;
- Energy projects, including windfarms, power generating stations and pipeline projects;
- Resource extraction, including oil, gas, stone and gravel;
- Military operations, including training facilities, easements and military training routes; and
- Forest activities

3.3.3.1 Past and Present Actions

Past and present actions have contributed to the affected environment or the context of the proposed B2H Project. While the sections describing the affected environment (Chapter 3) take these actions or events into consideration in a general way, the list and descriptions below provide additional detail on how past and present actions would have effects on some of the same resources that would be affected by the B2H Project. Table 3-314 lists the types of past and present projects and actions that could create cumulative effects with the B2H Project effects.

Table 3-314. Past and Present Actions

Name of Action	Description	Potential Effects Similar to B2H Project	Segments
Agriculture			
Irrigated and Dryland Farming	Conversion of open lands for crop and pasturage farming	Loss of habitat, alteration of wildfire regimes, increased erosion and sedimentation, new vectors for introduction of noxious weeds	1, 2, 3, 4, 5, 6
Timber Management	Logging, prescribed burns	Habitat alteration, fragmentation, displacement of wildlife species	2, 3

Name of Action	Description	Potential Effects Similar to B2H Project	Segments
Grazing	Expansion of rangeland livestock grazing areas or intensity (additional animals); improved grazing practices and range improvements	Habitat alteration, displacement of wildlife species, damage to sensitive plant species, alteration of wildfire regimes, new vectors for introduction of noxious weeds	1, 2, 3, 4, 5, 6
Land Development			
Expansion of developed areas	Conversion of open lands for residential, commercial and industrial uses	Loss of habitat, alteration of wildfire regimes, increased erosion and sedimentation, new vectors for introduction of noxious weeds	1, 2, 3, 4, 5, 6
Transmission Lines			
High-voltage transmission lines crossed by or parallel to the Proposed Action and alternatives	The transmission lines in the analysis area vary from 69V to 500 kV. Several high-voltage transmission lines carry electricity from hydroelectric generation stations near Boardman, Oregon to interconnection points in Idaho.	Same environmental effects as B2H Project.	1, 2, 3, 4, 5, 6
Roads and Linear Projects			
Interstate highways, U.S. highways, state highways, county roads, and rural roads	The average existing road density in the analysis area is 1.6 miles per square mile.	Habitat fragmentation; limitations on wildlife movement; air quality effects; noise	1, 2, 3, 4, 5, 6
Pipelines	Proposed Action has Twenty six pipeline crossings	Habitat fragmentation, wildlife displacement	1, 2, 3
Energy Projects			
Wind Energy	Nine existing wind energy projects in Morrow, Umatilla, and Union Counties.	Visual impacts, habitat alteration, fragmentation, displacement of wildlife species	1, 2, 3
Generating Stations	PGE Boardman 550 MW coal-fired generating station; PGE Coyote Springs 520 MW natural gas-fired generating station	Air quality, visual impacts, loss of habitat, displacement of wildlife species	1
Resource Extraction			
Quarries and aggregate operations	Ash Grove Cement plant; aggregate borrow pits	Loss of habitat; alteration of wildfire regimes; increased erosion and sedimentation; new vectors for introduction of noxious weeds; noise and dust.	3

Name of Action	Description	Potential Effects Similar to B2H Project	Segments
Mines	Surface and underground mining operations, access roads.	Loss of habitat; alteration of wildfire regimes; increased erosion and sedimentation; new vectors for introduction of noxious weeds; noise; dust; increased vehicle traffic	5
Oil and Gas	Exploration and production oil and gas wells, access roads.	Loss of habitat; alteration of wildfire regimes; increased erosion and sedimentation; new vectors for introduction of noxious weeds; noise; dust; increased vehicle traffic	5
Military Operations			
Naval Weapons System Training Facility Boardman (including avigation easements)	Operation of ranges and facilities; training activities.	Noise, impacts to wildlife and birds	1
Military Training Routes	Military training routes (MTRs) are aerial corridors used military aviation for training flights. The MTRs are individually operated through one of the local military air bases. Aircraft may fly as low as 100–110 feet above ground level within these MTRs in the B2H Project area.	Noise, impacts to birds	1, 5
Forest Activities			
Noxious Weed Management	Vegetation removal, equipment cleaning, seed and plant incineration	Short-term effects include effects to air quality, soils disturbance, noise, temporary displacement of wildlife. Long-term benefits include healthier vegetative communities, improved habitats.	2, 3
Roads and Road Maintenance - Open roads used by the public and closed roads used for administrative purposes only.	Maintenance on open roads occurs as needed to provide continued access and resource protection.	Soil disturbance, temporary wildlife displacement	2, 3
Water Quality and Fisheries Projects	Culvert replacements, large wood placement, riparian fencing, etc.	Short-term effects to water quality, aquatic habitats. Long-term improvements to fisheries	2, 3

Name of Action	Description	Potential Effects Similar to B2H Project	Segments
Forest products vegetation management/improvement, non-forest products vegetation management, commercial thinning, fuels management	A combination of mechanical thinning, slash busting, hand piling/burning, and prescribed burning are used to manage vegetation and fuels.	Short-term effects include effects to air quality, water quality, soils disturbance, noise, temporary displacement of wildlife. Long-term benefits include healthier stands, reduced fire behavior potential and enhance public uses.	2, 3

EXISTING AGRICULTURAL OPERATIONS

Agricultural operations in the analysis area for the Proposed Action and alternatives that result in direct and indirect effects similar to those anticipated from the B2H Project include irrigated and dryland farming including tree farming, timber management and grazing.

IRRIGATED AND DRYLAND AGRICULTURE

Expansion of irrigated and dryland cultivation into new areas can result in habitat destruction, fragmentation, alteration of drainage patterns, increased sedimentation, alteration of wildland fire regimes and new vectors for introduction of noxious weeds. During the period 1973 through 2000, dryland farming areas in the Columbia Plateau Ecoregion, in which Segment 1 of the project area is located, were being converted to irrigated agriculture, although the total area under agricultural production grew only about 0.6 percent during the 1990s (*Status and Trends of Land Change in the Western United States—1973 to 2000*, USGS 2012). Areas of irrigated and dryland agriculture remained essentially stable over the same period in the Blue Mountains Ecoregion (Project Segment 2), the Northern Great Basin Ecoregion (Project Segments 3, 4 and 5), and the Snake River Plain Ecoregion (Project Segment 6) (USGS 2012).

A subset of irrigated agriculture, tree farming, expanded over the study period in the Morrow County area (Project Segment 1) and continues to expand in land coverage, generally replacing pivot irrigated crops rather than converting undisturbed areas. Expansion of cultivated agriculture into undisturbed areas is not expected to contribute to cumulative effects because the rate of such expansion is negligible.

TIMBER MANAGEMENT

Logging, prescribed burns and other timber management activities can result in habitat alteration, fragmentation, displacement of animal species and other effects similar to those anticipated from the B2H Project. In the Blue Mountains Ecoregion (Project Segments 2 and 3) the most frequent land use and cover conversions during the 1973 to 2000 time period were the mechanical disturbance of forest by logging and rangeland improvement (generally removal of pinion/juniper vegetation to promote conversion to grasslands). The second most common overall conversion was nonmechanical disturbance of forest by fire and to a significantly lesser degree, to insect damage from the Douglas-fir tussock moth, the western spruce budworm and the mountain pine beetle (USGS 2012). Timber management activities, wildland fire and insect damage could contribute to cumulative effects in the B2H Project area.

Grazing

Rangeland grazing can produce effects including habitat damage, displacement of native animal species, damage to sensitive plant species, alteration of wildfire regimes, new vectors for introduction of noxious weeds and other effects similar to those anticipated from construction and operation of the B2H Project. The areas of rangeland grazing in the B2H Project area did not expand appreciably in the 1973 to 2000 USGS study period, and improving grazing practices and rangeland improvements somewhat improved range conditions during that period (USGS 2012). Expansion of grazing is not anticipated in either the short- or long-terms of the B2H Project. Improved grazing practices and range improvements have reduced impacts to vegetation, soils and water in the analysis area.

Please also see Section 3.2.6 – Agriculture, Land Use, Recreation, and Transportation for additional details of these activities.

Existing Residential, Commercial, and Industrial Developments

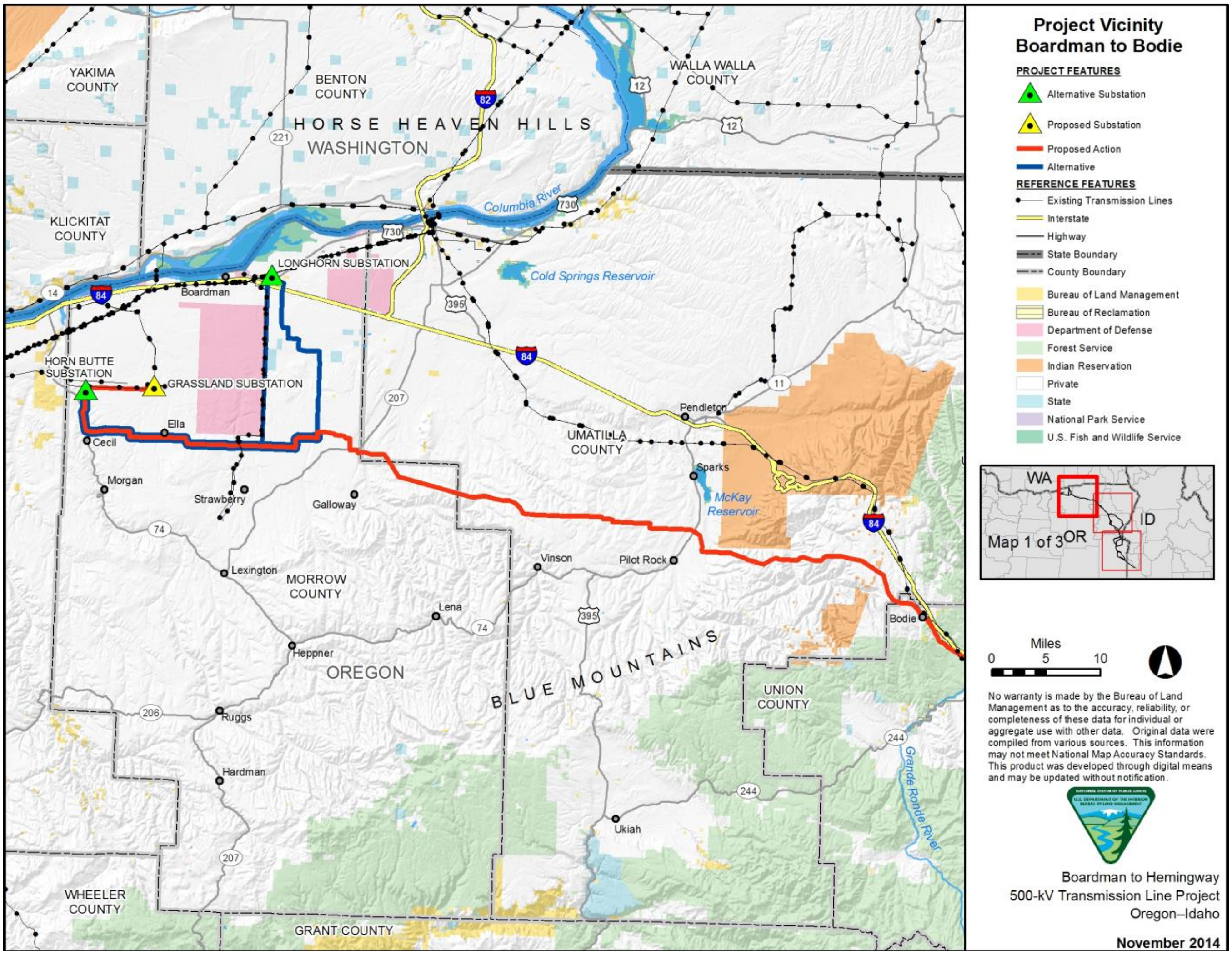
The expansion of developed areas can result in destruction of plant and animal habitats, segmentation, increased erosion, alteration of wildfire regimes and other effects similar to those anticipated from construction and operation of the B2H Project. Although population growth in Oregon overall was 20.4% from 2000 to 2010 and overall population growth in Idaho was 28.5% for the same period, growth in the B2H Project area was lower for 2000 to 2010. 2000 to 2010 growth rates for the six counties in the B2H Project area were; Morrow County, 1.6%; Union County, 5.0%; Umatilla County, 7.6%; Baker County, -3.6%; Malheur County, -1.0% and Owyhee County, 8.3%. Growth rates for cities in the B2H Project area were somewhat higher than for the counties with the rates for Boardman, Oregon, 12.8%; La Grande, Oregon, 6.1%; Baker City, Oregon, -0.3%; Ontario, Oregon, 3.5% and Marsing, Idaho, 15.8%. The overall conversion of lands for residential, commercial and industrial land uses during the 1973 to 2000 USGS study period for Project segments 1, 2, 3, 4 and 5 were negligible and somewhat higher but still low for Project Segment 6 (USGS 2012). The cumulative effects of conversion of lands for development purposes in the B2H Project area overall are low.

Please also see Section 3.2.6 – Agriculture, Land Use, Recreation and Transportation for additional details on land development.

Existing Transmission Lines

High-voltage (typically 115-, 230-, 345-, or 500-kV) transmission lines carry electricity long distances and begin and end in substations that serve either generation or load centers. In some cases a formal utility corridor has been designated where these transmission lines cross public lands, but in other cases the lines are recognized as utility crossings not in a corridor.

Major transmission lines in the project area for the B2H Project are shown in Figure 3-70, Figure 3-71, and Figure 3-72.

1 

2 **Figure 3-70. Project Vicinity Boardman to Bodie**

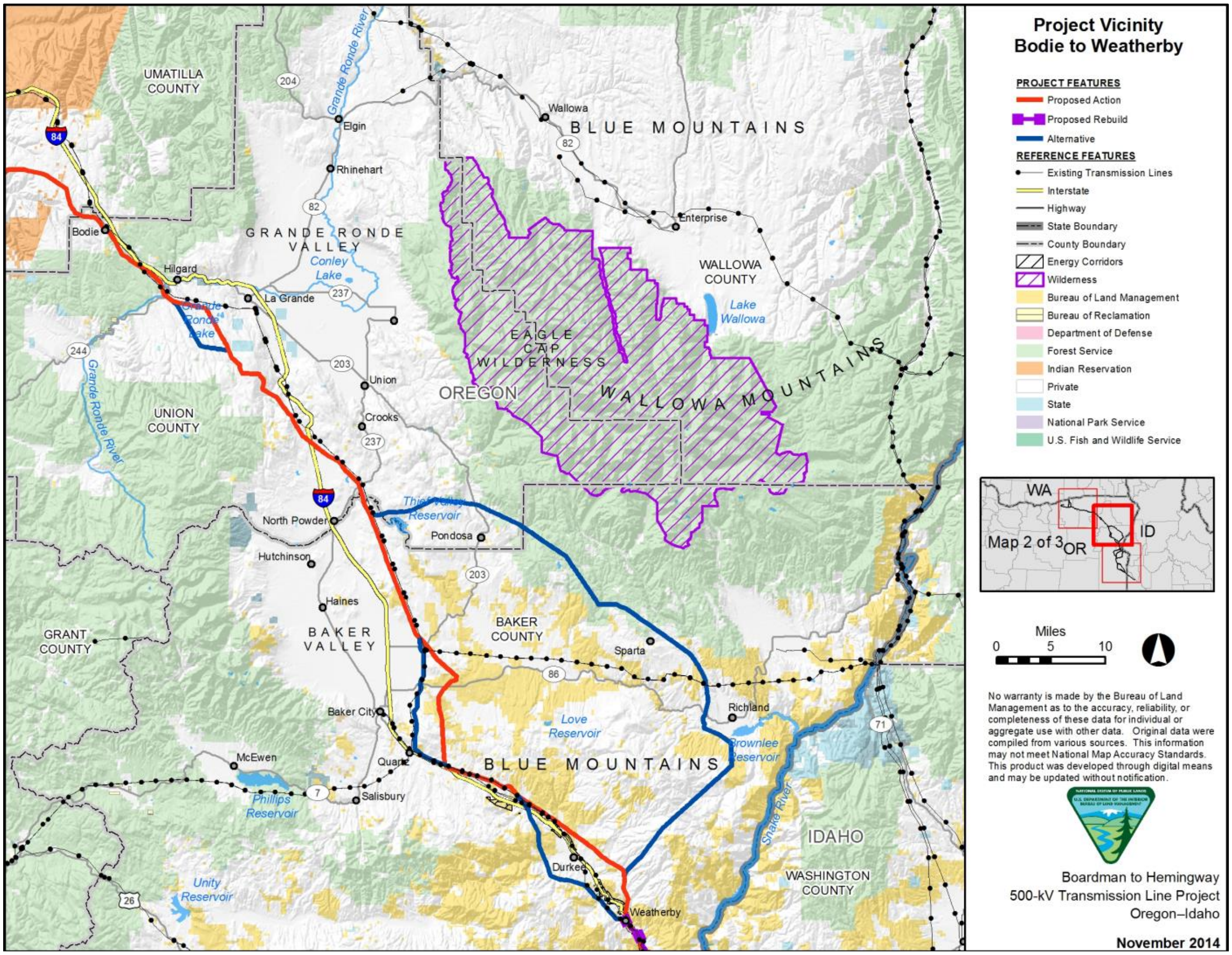
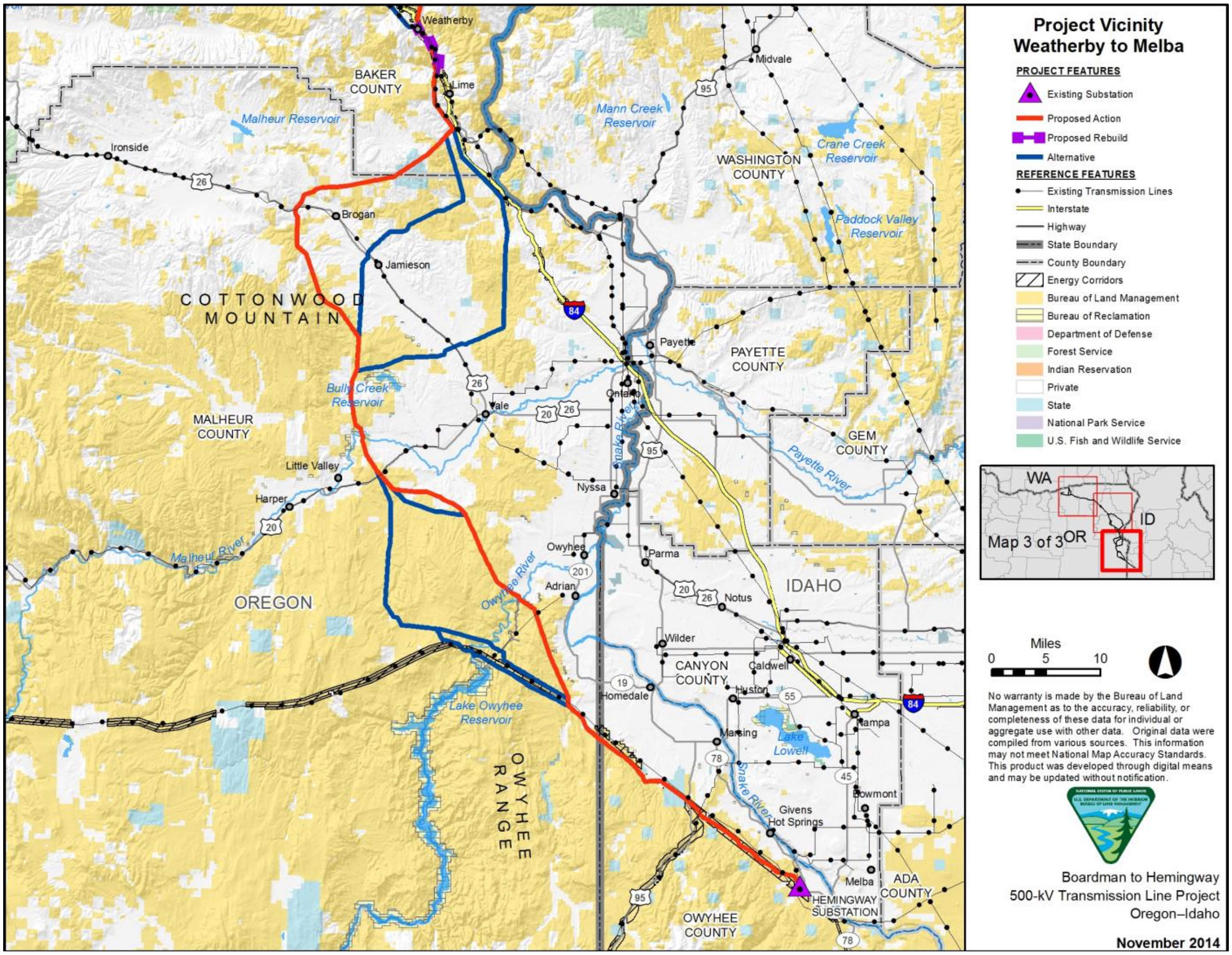


Figure 3-71. Project Vicinity Bodie to Weatherby

1



2

Figure 3-72. Project Vicinity Weatherby to Melba

These transmission lines vary from 69 kV to 500 kV, and have rights-of-way from 100 feet to 250 feet in width. Several of the high-voltage transmission lines carry electricity from the hydroelectric generation stations near Boardman, Oregon to interconnection points in Idaho, where they feed the western grid. These transmission lines have been in service for variable amounts of time, but generally between 20 years and 40 years. The typical effects of high-voltage transmission lines on lands and resources are substantially the same as those for the B2H Project, and include displacement of some land uses in the right-of-way and in the areas between the rights-of-way; noise, electromagnetic and visual impacts; habitat fragmentation and displacement of wildlife; and effects to soils and water resources, with variations due to differing landscapes and the nature of the land use patterns and resources present in each area.

The cumulative effects of existing transmission lines with the effects of the B2H Project relate primarily to the cumulative land disturbing effects of parallel lines or those in close proximity. Although the direct and indirect effects of two proximate transmission lines may be limited to their respective rights of way, the land uses between the rights-of-way may be constrained as a cumulative effect of their proximity. The cumulative effects of existing high-voltage transmission lines that are located within 0.25-mile of the B2H right-of-way on lands and resources between them are considered.

EXISTING ROADS AND PIPELINES

Roads within the B2H Project area include interstate highway 84 (I-84), U.S. highways, state highways, county roads, and numerous rural roads. The project area is primarily rural with the greatest densities of roads occurring near cities and towns. The average existing road density in the analysis area is 1.6 miles per square mile. Major roads that parallel the B2H Project are of greatest interest for potential cumulative effects because of their linear nature and thus contribution to habitat fragmentation and their potential to inhibit movement by wildlife. Figure 3-70, Figure 3-71, and Figure 3-72 show locations where existing interstate highways, U.S. highways, and state highways parallel or are in close proximity to the Proposed Action and alternative transmission line rights-of-way.

There are also numerous county and other rural roads within the B2H Project area. Existing and project-caused fragmentation was assessed for habitats. Pipeline corridors that parallel the B2H Project are most important for cumulative effects because of their contribution to habitat fragmentation and to land use limitations. The Proposed Action would cross 26 pipelines, and would parallel one natural gas pipeline in the vicinity of La Grande, Oregon.

EXISTING ENERGY PROJECTS

In the B2H Project area, the types of energy projects that could have cumulative effects include power generating stations and wind farms.

GENERATING STATIONS

The Boardman Coal Plant is a coal-fired power plant in Boardman, Oregon. The facility has a 550 MW capacity and is operated by Portland General Electric. The Coyote Springs project consists of two units powered by natural gas. Unit 1 has a 240 MW capacity and unit 2 has a 280 MW capacity. The Neal Hot Spring Geothermal Plant is located near Vale, Oregon and generates about 22 MW.

Generating stations have effects to air quality and climate change; visual effects and effects to wildlife and wildlife habitat, particularly migratory and resident birds.

Wind Farms

There are eight wind energy projects in Morrow and Umatilla Counties. These projects have a combined capacity of approximately 500 MW. There is one wind energy project in Union County with a capacity of approximately 60 MW. Wind energy projects are highly visible and have the potential for visual effects that would be cumulative with the effects of the B2H Project. Wind energy projects also have effects to and can displace existing land uses, including agricultural uses, and have effects on wildlife, particularly migratory and resident birds.

Existing Resource Extraction Projects

A number of mining claims; oil, gas and mineral leases; and quarries and gravel pits are located within the cumulative effects analysis area for the Proposed Action and alternatives. Most of these are not currently in active operation and so are not creating direct or indirect environmental effects.

The Proposed Action and alternatives cross several active resource extraction project areas, including the limestone quarry at the Ash Grove Cement plant near Weatherby, Oregon; six active gravel pits; a gold mining reclamation area; and an active gold placer mining area. Effects of resource extraction activities that are potentially cumulative with B2H Project effects include air quality and water quality effects; noise; displacement of wildlife; and vehicle traffic.

Existing Military Operations

In the B2H Project area, existing military operations that could have cumulative effects include the Naval Weapons System Training Facility Boardman and military training routes.

Naval Weapons System Training Facility Boardman

The 47,432 acre Naval Weapons Systems Training Facility Boardman is located in northern Morrow County, Oregon, approximately three miles south of Boardman and 45 miles west of Pendleton. The facility is a detachment activity of Naval Air Station Whidbey Island, Oak Harbor, Washington. Operations at the Naval Weapons System Training Facility Boardman include on-going training and testing and the use of ranges by aircraft from the Naval Air Station Whidbey Island. Since 1906, all bombing and gunnery practice has used non-explosive ordnance for training purposes and high explosive ordnance has not been used. Since the early 1990s, Naval Weapons System Training Facility Boardman has been used by the Navy, Oregon National Guard, and other Services (e.g., Marine Corps, Air Force, and U.S. Air Force Reserve) for a variety of land based and aviation military readiness activities (United States Navy, 2012).

The effects of existing operations at Naval Weapons System Training Facility Boardman that could be cumulative with the B2H Project include noise, effects to air quality and effects to wildlife including Washington ground squirrel and resident and migratory birds.

Military Training Routes

Military training routes (MTRs) are aerial corridors used solely by military aviation for training flights. The routes are the result of a joint venture between the Federal Aviation Administration (FAA) and the Department of Defense (DoD) to provide for high-speed, low-level military activities. MTRs are divided into instrument routes (IR) and visual routes (VR). Each route is identified by either of these 2 letters followed by either 4 digits for routes below 1,500 feet above ground level or 3 digits for routes extending at least 1 leg above 1,500 feet above ground level. IR routes are flown under air-traffic control, while VR routes are not. Each route is defined by a number of geographical coordinates. The MTRs are individually operated through one of the local military air bases. Unless noted on the air navigation chart, aircraft may fly as low as 100–110 feet above ground level in the B2H Project area along these military routes.

The effects of existing military training route operations that could be cumulative with the B2H Project include noise, effects to air quality and effects to wildlife including resident and migratory birds.

Existing Forest Management

Management activities in the Wallowa-Whitman National Forest that could have impacts similar to the B2H Project include vegetation management, noxious weed management, invasive species management, road maintenance, and aquatic habitat improvements. These projects could have short-term effects to soils and erosion; water quality; air quality; noise; and displacement of fish and wildlife. Long-term effects would be improved wildlife and fish habitat health.

3.3.3.2 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions (RFFAs) are actionse for which there are existing decisions, funding, formal proposals, or which are highly probable. Reasonably foreseeable future actions are not connected to the proposed B2H Project, nor are they part of the alternatives. They are projections being made so that future effects, cumulative and otherwise, can be estimated, as required by NEPA. For example, if the past, present or reasonably foreseeable future action would disturb 50 acres of a habitat in the cumulative effects analysis area, and the Proposed Action or alternative would disturb another 40 acres, the cumulative effect would be to 90 acres of habitat.

Table 3-315 identifies the reasonably foreseeable future actions located in or near the B2H Project area that may have effects to resources in the cumulative effects analysis areas. Following the table are descriptions of the nature and possible effects of each action. These actions are considered in the cumulative effects analysis.

1 **Table 3-315. Reasonably Foreseeable Future Actions**

Name of Action	Type of Action	Description	Footprint	Segment
Portland General Electric Boardman Plant Emissions Controls	Energy	New emissions controls will be installed at the 585-megawatt coal-fired electricity generating plant. The emissions controls are expected to reduce nitrogen oxide emissions by about 50 percent and sulfur dioxide emissions by 75 percent.	In Boardman, Oregon	1
Gas Transmission Northwest Carty Lateral Project	Road and Linear Projects	Gas Transmission Northwest is proposing to construct and operate a natural gas pipeline lateral that would connect to the existing mainline system in Morrow County, Oregon.	Morrow County	1
Umatilla Electric Cooperative Transmission Line	Transmission	Umatilla Electric Cooperative is proposing to construct, maintain, and operate a new 230-kV transmission line between the proposed Longhorn Substation and the Juniper Canyon area. Much of the route would be along the east side of Bombing Range Road and would parallel the existing 30 kV and 115kV distribution lines. The current design calls for a mix of 100-, 70-, and 130-foot structure heights (monopole and H-frame).	Morrow County	1
Longhorn Substation	Energy	Bonneville Power Administration acquired real property to construct transmission facilities, including the proposed 500/230-kV Longhorn Substation. The substation is a potential terminus for the B2H alternatives being evaluated in this EIS. Facilities to be constructed could include a control house; equipment in the fenced yard including circuit breakers, switches, bus tubing and pedestals, substation dead end towers, grounding mat; and a stormwater retention system. A small amount of roadwork would be required to access the site and connect to local county roads. BPA has not made a decision to construct the substation, therefore has not yet finalized plans or a schedule for construction.	33 acres	1
Morrow Flat	Energy	BPA is constructing a 230/115-kV substation called Morrow Flat would be located to the north of Longhorn Substation on the same parcel. A transmission corridor that contains three existing lines— McNary-Jones Canyon 230-kV, McNary-Boardman 230-kV, McNary-Coyote Springs 500-kV would be located between the two proposed substations. Construction has started and is expected to be completed by end of 2015.	20 acres	1
Ella Butte Wind Power Project	Energy	The project is a proposed 52-turbine, 104 MW wind farm. The proposed facility consists of up to 502 MW of nominal electric generating power. A new overhead 230 kV transmission line would connect the facility collector substations to the point of interconnect at the future Stanfield Substation.	Near Ione in Morrow County, Oregon	1

Name of Action	Type of Action	Description	Footprint	Segment
Saddle Butte Wind Park	Energy	The proposed Saddle Butte Wind Park would be a wind energy facility consisting of up to 133 wind turbines and related facility components (including a substation, a field workshop, meteorological towers, access roads, and aboveground and underground transmission lines). The facility would have a peak generating capacity of up to 399 MW with an average generating capacity up to 133 MW. The proposed facility will be in Gilliam and Morrow Counties, approximately 20 miles south of the Columbia River between Eightmile Canyon and State Highway 74. The site boundary consists of 11,793 acres of private lands with 6,455 acres in Gilliam County and 5,338 acres in Morrow County. The applicant intends to connect the facility to the regional transmission system through the Bonneville Power Administration Slatt Substation. The applicant has proposed a single transmission corridor running approximately 19 miles to the Bonneville Power Administration Slatt interconnection facility.	Morrow County and Gilliam County	1
Multi-species Candidate Conservation Agreement— Habitat Conservation	Agreement	The U.S. Fish and Wildlife Service (USFWS) approved a Multi-Species Candidate Conservation Agreement with Assurances with Threemile Canyon Farms, PGE, The Nature Conservancy, and the Oregon Department of Fish and Wildlife on March 16, 2004 (U.S. Fish and Wildlife Service 2011). The agreement is effective for 25 years and provides conservation measures for the Washington ground squirrel, ferruginous hawk, loggerhead shrike, and sage sparrow (covered species) on 93,000 acres near Boardman, Oregon.	Morrow County	1
U.S. Army Umatilla Chemical Depot Base Redevelopment Plan	Military	The Umatilla Chemical Depot (UCD) is located in northern Morrow and Umatilla counties. DoD recommended closure of UCD during the 2005 Base Realignment and Closure round of announcements. The UCD redevelopment plan recommends the following future land uses: • Agriculture–655 acres • Wildlife refuge–5,613 acres • Oregon National Guard military training–7,421 acres • Highway commercial industrial–1,077 acres • Oregon Department of Transportation Interstate corridor–91 acres • Industrial restricted–942 acres • Industrial unrestricted–1,115 acres	17,000 acres	1

Name of Action	Type of Action	Description	Footprint	Segment
U.S. 730 Corridor Refinement Plan (2007);	Road and Linear Projects	The US 730 Corridor Refinement Plan is specifically concerned with the section of US 730 from the east city limits of the City of Irrigon (MP 176.61) to the west city limits of the City of Umatilla (MP 182.54). In 2003, the Oregon Department of Transportation designated this section of US 730 as a Safety Corridor. This section of the highway is currently characterized as having a significant number of private-access driveways, a limited supporting roadway network and a significant amount of high-speed-truck and through traffic. The US 730 Corridor Refinement Plan identifies highway safety improvements along this section of US 730 over the next 20 years. Potential impacts are primarily related to construction of the project and include noise and air pollutant emissions.	Umatilla County	1
Perennial Wind Chaser Station	Energy	Perennial Power proposes to construct and operate up to four natural gas-fired turbines with a nominal generating capacity up to 412 MW. The project will be sited about 3 miles southwest of Hermiston, Oregon, adjacent to the Hermiston Generating Plant in Umatilla County. Power generated at the station would be distributed by a new 17.9-mile, 230 kV transmission line.	20 acres	1
Rackspace Data Center		Rackspace, a data hosting company, has purchased land at the Port of Morrow, near Boardman. The company intends to build a large data center on the site. Plans for the facilities have not been finalized.	99 acres	1
Coal Transfer Station	Resource extraction	The coal transfer station, also known as the Coyote Island Terminal, is a coal export project at the Port of Morrow in Boardman. Ambre Energy, the proponent, would bring up to 8.8 million tons of coal annually by train from Montana and/or Wyoming to Boardman. Ambre Energy would store the coal in covered storage buildings at the Port of Morrow before transferring it to barges using an enclosed conveyor system. The barges would then haul the coal down the Columbia River to Port Westward in Clatskanie and then transfer the coal onto vessels to deliver it to Asia.	72000 Dewey West Lane in Boardman, Oregon	1
Huntington Windfarms	Energy	The proposed site is 4.5 miles northwest of Huntington located off Malheur Lane, Durbin Creek Lane, and Interstate 84. The maximum capacity would be 20 megawatts from 12 turbines.	Baker County	1

Name of Action	Type of Action	Description	Footprint	Segment
Baker Habitat Restoration and Fuels Treatment Projects	Vegetation management	The BLM Vale District BLM would implement a multi-year phased fuels management and habitat restoration project in the Baker Resource Area. The project encompasses approximately 45,000 acres of BLM lands and 1,700 acres of Oregon Department of Fish and Wildlife lands. The project area includes the communities of Auburn, Hereford, and Durkee, Oregon.	46,700 acres; Baker County, 7 to 25 air miles southwest of Baker City	3
District-wide Noxious Weed Treatments	Vegetation management	There is an ongoing interagency effort with the Oregon Department of Agriculture, eastern Oregon counties, and BLM to treats noxious weeds. The effort uses mechanical methods (chainsaws, chaining), manual removal (hand pulling), biocontrol methods (release of insects, or other organisms to interfere with a targeted weed species), directed livestock, and herbicides.	Counties within the BLM Vale District	3,4,5
Mormon Basin Fuels Treatment	Vegetation management	The fuels treatment project is largely focused on juniper reduction in southern Baker County. The project is a joint effort coordinated with BLM, Oregon Watershed Enhancement Board funding, and Oregon Department of Fish and Wildlife habitat management projects.	Southern Baker County	3,4
Malheur Queen Placer	Resource extraction	The project is located on the southern slope of the divide between Willow Creek and Burnt River. The project area is approximately 1.2 miles northwest of Malheur Reservoir, 5.5 miles south of the Burnt River and 47 road miles northwest of Vale in Malheur County, Oregon. The Malheur Queen Placer project mines placer gravel, sand, and silt sized material within and adjacent to two north-northwest-trending perennial stream channels and two intermittent stream channels. The project is a conventional gold placer operation. The operator excavates, sizes, and washes gold-bearing gravels and tailings to extract gold particles. No chemical processing is involved in the operation.	800 acres	4
Neal Hot Springs Geothermal	Energy	The Neal Hot Springs is near Vale, Oregon in Malheur County. The geothermal project consists of three 7.33 net megawatt modules with an annual average of 22 megawatts. On August 1, 2013, U.S. Geothermal Inc. announced that final completion of the project was achieved.	NW of Vale approximately 20 miles	4
Lime Windfarms	Energy	The 3 megawatt wind project is located in Huntington. The estimated annual energy generation is 7,500 to 8,000 Megawatt hours.	Baker County	4

Name of Action	Type of Action	Description	Footprint	Segment
Grassy Mountain Gold	Resource extraction	The project is in planning stages to develop gold resources in northern Malheur County, southwest of Vale. BLM anticipates minimal impact on public lands due to an access road. The proponent anticipates processing facilities to be located on private lands with a relatively small surface footprint.	North Central Malheur County	5
Gateway West Transmission Line	Transmission	Idaho Power and Rocky Mountain Power plan to construct and operate 230 and 500 kV transmission lines from the Windstar substation near Glenrock, Wyoming to the Hemingway substation near Melba, Idaho. The companies anticipate completing phased transmission line segments between 2019 and 2023.	1,000 miles from the Windstar substation near Glenrock, Wyoming to the Hemingway substation near Melba, Idaho	6

Naval Weapons System Training Facility Boardman

Operations at the Naval Weapons System Training Facility Boardman include on-going actions described above and proposed future actions to ensure critical training and testing requirements are met. These proposed future actions include:

- Maintaining baseline training and testing activities at current levels
- Increasing certain training activities from current levels to support the Navy and Oregon National Guard requirements
- Developing ranges and facilities and implementing range enhancements to support training requirements
- Accommodating training requirements associated with force structure changes and introduction of new weapons systems for training

The on-going operations and environmental effects of future actions are being evaluated in a Draft Environmental Impact Statement for Naval Weapons Systems Training Facility Boardman released for public review and comment on September 6, 2012. Two action alternatives are considered in the Draft EIS.

Alternative 1, in addition to accommodating training activities addressed in the No Action Alternative, would support an increase in the types of training activities and the number of training events conducted at Naval Weapons System Training Facility Boardman, accommodate force structure changes, and provide enhancements to training facilities and operations at Naval Weapons System Training Facility Boardman. The range enhancements analyzed under Alternative 1 to meet Navy and Oregon National Guard training requirements would include the construction and operation of a

Multi-Purpose Machine Gun Range, a Digital Multi-Purpose Training Range, an eastern Convoy Live Fire Range, a Demolition Training Range, a Range Operations Control Center and Unmanned Aerial Systems (UAS) Training and Maintenance Facility (housed in a single building) with small airstrip, as well as the designation of a drop zone. An additional Military Operations Area (MOA) to join existing restricted airspace and the existing Boardman MOA in the northeast area of Boardman airspace would be created and would be called the Boardman Northeast MOA. This new training airspace would be 41 square nautical miles and join the current Boardman R-5701A, R-5701B and R-5701C and the existing Boardman MOA. Low-altitude flight tracks would be oriented to facilitate the use of this additional MOA, avoiding existing and planned wind turbines in the vicinity of Naval Weapons System Training Facility Boardman.

Alternative 2 would include all training and range 1 enhancement elements of Alternative 1. In addition, under Alternative 2 three mortar pads would be established, a second (western) Convoy Live Fire Range and a Range Operations Control Center (separate from the UAS Training and Maintenance Facility) would also be constructed.

3.3.3.3 Land Management Plan Revisions

Baker Field Office Draft Resource Management Plan and Environmental Impact Statement

The Baker Field Office Draft Resource Management Plan was released to the public on November 15, 2011. The planning area contains 428,425 acres of BLM-administered lands in portions of Baker, Union, Wallowa, Malheur, Morrow, and Umatilla Counties in Oregon and Asotin County in Washington. When approved, the plan will replace the 1989 BLM Baker Resource Management Plan.

The Draft Resource Management Plan identified Alternative 1 as the preferred alternative. The BLM will continue to refine the preferred alternative through the land use planning and NEPA process until the approved resource management plan and record of decision are signed. While the preferred alternative estimates the approved resource management plan, BLM can adjust the preferred alternative until the approved resource management plan and record of decision are signed.

The preferred alternative emphasizes adaptive management to achieve long-term ecosystem health and resiliency while providing for a variety of resource uses. The BLM would promote management activities that maintain and/or restore ecosystem health and connectivity, with a restoration emphasis on Wyoming big sagebrush and riparian habitats in areas with a degraded condition. Right-of-way development, including transmission lines, would face moderate restrictions.

Southeastern Oregon Resource Management Plan Amendment and Environmental Impact Statement

The planning area for the RMP Amendment covers 6.5 million acres, of which 4.6 million surface acres are managed by BLM. The planning area is bounded on the east by Idaho, on the south by Nevada, on the north by the Vale District's Baker Resource Area, and on the west by the BLM Burns District's

Three Rivers and Andrews Resource Areas and the Malheur National Forest. The purpose of the plan amendment is to analyze a broader range of management alternatives for off-highway vehicle use, livestock grazing, and lands with wilderness characteristics.

Owyhee Field Office Resource Management Plan and Environmental Impact Statement

The planning area would be the Owyhee Field Office in southeastern Idaho. The new resource management plan would revise the existing 1999 RMP. The BLM Director's schedule, as of November 2013, indicates that a land use plan evaluation was prepared in 2013 and another plan evaluation is scheduled for 2018. The RMP revision process would be scheduled based on the completed evaluations.

Oregon Greater Sage-Grouse Draft RMP Amendment/EIS

The BLM is undertaking a large-scale effort to amend or revise RMPs in response to the US Fish and Wildlife Service (USFWS) 12-Month Finding for Petitions to List the Greater Sage-Grouse as Threatened or Endangered (75 Federal Register 13910, March 23, 2010). The planning area consists of approximately 15 million acres of land in Oregon, which includes nearly 10 million acres of Greater Sage-Grouse habitat on BLM-administered lands. When approved, up to eight BLM RMPs guiding management in Oregon will be amended.

The proposed RMP Amendments will identify and incorporate appropriate regulatory mechanisms to conserve, enhance, and restore Greater Sage-Grouse habitat and to eliminate, reduce, or minimize threats to this habitat on BLM-administered lands in Oregon. Proposed amendments to the BLM LUPs would include allowable uses and management actions for select resources and resource uses. Allowable uses are those that are allowed, restricted, or prohibited and may include stipulations. The alternatives identify the range of management actions, restrictions, and constraints that would be placed on allowable uses on BLM-administered lands to conserve, restore, and enhance Greater Sage-Grouse habitat.

In the Draft RMP Amendment/EIS the BLM Preferred Alternative is Alternative D. The primary objective of Alternative D is to maintain or enhance Greater Sage-Grouse habitat to establish a mix of sagebrush classes so as to provide sustainable habitat for the Greater Sage-Grouse. This objective allows for human-caused disturbance (including current on-the-ground disturbance) to cover less than three percent of preliminary priority management areas (PPMA), regardless of ownership; it requires appropriate mitigation for habitat disturbance within PPMA and preliminary general management areas (PGMA). It prioritizes enhancement and restoration of Greater Sage-Grouse habitat in order to maintain and/or increase Greater Sage-Grouse abundance and distribution. It also includes management actions, requirements, and stipulations to meet those objectives that are targeted to the resource issues and challenges specific to eastern Oregon Greater Sage-Grouse. Actions described in Alternative D and all the alternatives would be subject to valid existing rights.

Based on comments on the Draft EIS, the BLM will make the final selection of the RMP Alternative.

IDAHO AND SOUTHWESTERN MONTANA GREATER SAGE-GROUSE DRAFT LAND USE PLAN AMENDMENT AND EIS

The BLM is undertaking a large-scale effort to amend or revise RMPs with associated Environmental Impact Statements (EISs) in response to the US Fish and Wildlife Service (USFWS) 12-Month Finding for Petitions to List the Greater Sage-Grouse as Threatened or Endangered (75 Federal Register 13910, March 23, 2010). The planning area consists of about 53 million acres of land in Idaho and Southwestern Montana, which includes about 12.7 million acres of BLM-administered lands and 17.4 million acres of National Forest System Lands. There are approximately 9.3 million acres of Greater Sage-Grouse habitat on BLM-administered lands and 1.9 million acres on National Forest System Land. When approved, up to 21 BLM RMPs and 8 U.S. Forest Service Land and Resource Management Plans would be amended.

The Draft Land Use Plan Amendment and EIS identifies a No-Action Alternative and five action alternatives, B, C, D, E, and F. Alternatives D and E have been identified as co-Preferred Alternatives for the purposes of public comment and review. These alternatives each have different strengths that reduce, eliminate or minimize threats to Greater Sage-Grouse and their habitat and the BLM and Forest Service are considering the management guidance described within each of these alternatives as ways to respond to Greater Sage-Grouse threats within the Idaho and Southwestern Montana Sub-Region.

Under Alternative D, the BLM and Forest Service would require no net unmitigated loss of PPMAs instead of a set disturbance cap. New authorizations for the following uses would not be allowed in PPMAs: transmission facilities (greater than 50kV), wind energy testing and development, commercial solar development, commercial geothermal development, nuclear development, oil and gas development, mineral development, airports, and ancillary facilities associated with any of the aforementioned development; paved roads and graded gravel roads, landfills, and hydroelectric projects. Communication sites would be allowed. PGMA would be right-of-way avoidance areas.

Under Alternatives D and E, habitat and population data would be utilized to determine change in habitat or population compared against a 2011 baseline. Adaptive “triggers” would provide a regulatory backstop to prevent further loss and stabilize habitats and populations. The adaptive triggers would reflect dramatic shifts in population or habitat, based on an average over a 3-year period when compared to 2011 values. The triggers would be individually applied within each conservation area which would add an increased level of sensitivity to change. Two types of triggers are defined, and are referred to as hard and soft triggers.

Infrastructure development, including transmission lines and facilities, would be guided by management actions specific to the Greater Sage-Grouse habitat zone within which the infrastructure project is located:

- Core Habitat Zone: New infrastructure generally precluded except for valid existing rights and/or or incremental upgrade and/or capacity increase of existing infrastructure, subject to some limitations. Notwithstanding this general limitation, the Governor’s Alternative provides a limited process for exemptions focusing on ensuring the population objectives for that conservation area are being met.

- Important Habitat Zones: New infrastructure generally permitted subject to certain criteria similar to the best management practices required for proposing a project under the Core Habitat Zone exemption process.
- General Habitat Zone: New infrastructure permitted. No special Greater Sage-Grouse direction.

The Idaho and Southwestern Montana Sub-Regional Greater Sage-Grouse Land Use Plan Amendment and Final Environmental Impact Statement is due to be released and a final decision is expected to be signed in late spring 2015. Implementation of the decision will amend the Owyhee RMP to provide additional conservation measures for Greater Sage-grouse and their habitats.

WALLOWA-WHITMAN NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

The LRMP for the Wallowa-Whitman National Forest is currently undergoing revision, together with the other forests in the Blue Mountains – the Umatilla and Malheur. The plan represents a revision of the 1990 LRMP. A Draft EIS addressing six alternatives was released to the public in March 2014; a Draft LRMP based on the agency's preferred alternative was also released. The comment period ended August 15, 2014. A Final EIS and Draft Record of Decision are currently anticipated for release during Fall 2015 and final decision is expected Spring 2016. Also pending final approval are the Wallowa-Whitman national Forest Travel Management Plan to govern the forest system of roads designated for motor vehicle use by the public, and the Wallowa-Whitman Invasive Species Record of Decision, which includes an Early Detection Rapid Response (EDRR) strategy for addressing new ground disturbing activities and strategies for preventing the spread of invasive species and the treatment of known sites.

If the decision for the B2H Project is signed prior to the decision approving a revised forest plan, implementation of the project would proceed under the current (1990) LRMP and would require site-specific amendment as described in the Plan Amendments (Section 3.4). If the timing is reversed, the B2H Project decision will need to be compliant with the revised forest plan. Review of land allocations as presented in the Draft LRMP (April 2014) indicates that the Proposed Action would be within proposed MA 5 – Administrative Areas including utility corridors. All of the lands currently designated MA 17 adjacent to the I-84 corridor would be incorporated into the new MA 5. While MA 5 has similar purposes as the current MA 17, the details regarding guidelines and standards are expected to be different.

3.3.4 CUMULATIVE EFFECTS ANALYSIS

The assessment of cumulative effects is presented here for only those resources for which there is a potential for cumulative effects to occur.

3.3.4.1 EARTH RESOURCES

METHODOLOGY

The analysis area for cumulative effects to soils is the same as the analysis area for direct and indirect effects, 0.5 mile on each side of the transmission line centerlines and 50 feet on each side of the centerlines of access roads. The analysis area for cumulative effects to minerals includes areas of active resource extraction of minerals, oil, and gas that are crossed by transmission line and access road centerlines. The analysis area for cumulative effects to paleontological resources includes areas of high (3+) potential fossil yield crossed by the transmission line centerlines and by access roads.

Cumulative effects to earth resources are described project-wide for the Proposed Action and alternatives because the differences in effects among the alternatives and project segments are small. To the extent notable differences between alternatives or among project segments exist, they are described in the summary of effects discussions for each resource.

Geological Hazards

Geological hazards pose a risk to project infrastructure. Direct and indirect effects of B2H Project activities are not anticipated to exacerbate geologic hazards in the cumulative effects analysis area, and therefore no cumulative effects from geological hazards are anticipated.

Soils

Effects from the B2H Project combined with effects from existing actions and RFFAs could result in surface disturbance that could temporarily increase the rate of soil erosion by water or wind. The cumulative effect of the B2H Project increases with the number of other projects within a localized area.

In most project segments, the cumulative effects to soils and potential for reclamation success of the alternatives are generally similar for all alternatives. There would be minor differences in effects based on the relative lengths and total disturbed areas of the alternatives. For most project segments and alternatives, there are no RFFAs within the cumulative effects analysis area, so cumulative effects would be the same as the direct and indirect effects. Cumulative erosion impacts on soils during construction of the B2H Project would be short-term during the construction period, and would therefore be moderate. With effective reclamation of disturbed areas that are not necessary to project operations, and effective implementation and long-term maintenance of erosion control measures, long-term cumulative effects on soils during project operations would be low in that on-going disturbances would be primarily in areas where soils exhibit low susceptibility to erosion by water or wind.

Segment 1 of the B2H Project area differs from other project segments in the level of existing land use activity and the much larger number of present actions that are currently affecting soil resources and RFFAs that would affect soils. Fourteen of the RFFAs in the B2H Project area are located in Segment 1, and many of those are within the cumulative effects analysis area for soils. To the extent construction or other ground-disturbing activities for present actions and RFFAs coincide with the B2H Project construction period, the short-term cumulative effects to soils could be higher than the direct and indirect effects of the B2H Project. For the purposes of this analysis, it is assumed that all future ground disturbing activities would be subject to applicable regulations and would be performed according to applicable SWPPPs and erosion control measures. Although cumulative effects to soils are expected to be higher in Segment 1 relative to other project segments, the short-term effects are anticipated to be moderate due to some disturbance of land surface where soils exhibit high susceptibility to erosion by water or wind. Long-term cumulative effects are anticipated to be low, in that on-going disturbances would be primarily in areas where soils exhibit low susceptibility to erosion by water or wind.

MINERALS

The existing Ash Grove Cement Plant is located in the cumulative effects analysis area. Direct and indirect, short-term and long-term effects on mineral resources and extractive activities for the B2H Project as a whole would be low because construction and operation of the B2H Project would not displace mineral operations. No reasonably foreseeable future actions are within the cumulative effects analysis area for minerals. The cumulative effects to mineral extraction would be the same as the direct and indirect effects, low in both the short- and long-terms.

PALEONTOLOGICAL RESOURCES

Direct effects to paleontological resources can result from ground disturbing activities in conjunction with present actions and RFFAs. Indirect effects can result from unauthorized fossil collection in areas made more accessible by project construction and operation activities and new and improved access roads.

The potential for disturbances to paleontological resources are generally similar among the project segments and among the alternatives, with minor variations due to the relative lengths of the alternatives in areas of high potential fossil yield as compared with the Proposed Action. Preconstruction surveys of high PFY areas, successful implementation of the Paleontological Monitoring and Mitigation Plan and Unanticipated Discovery Plan and construction monitoring in areas of high potential for fossil occurrence would result in low short- and long-term direct impacts to paleontological resources. Due to the relatively rare occurrence of areas of high potential fossil yield in the B2H Project area, long-term indirect effects would also be low. There are no reasonably foreseeable ground-disturbing projects in the cumulative effects analysis area for paleontological resources, so cumulative effects would likewise be low.

3.3.4.2 WATER RESOURCES

METHODOLOGY

The geographic area of influence for the analysis of cumulative impacts to water resources is defined as the watersheds (4th level HUCs) of waterbodies crossed by the Proposed Action and alternatives. The area of influence for analysis of cumulative impacts to wetlands is defined as mapped wetland and riparian areas up to 0.5 miles from the Proposed Action or alternatives and within 50 feet of the centerline of access roads. Present actions and reasonably foreseeable future actions (RFFA) within these geographic areas of influence are listed in Table 3-314 and Table 3-315.

The consideration of past actions is reflected in current environmental conditions as described in the affected environment baseline conditions in Section 3.2.2. For this analysis, cumulative impacts to water resources within the geographic area of influence are the combined direct and indirect effects of the RFFAs and present actions plus the direct impacts of the Proposed Action and alternatives. The contribution of the Proposed Action and alternatives to the water resources cumulative impacts are assessed in terms of disturbance and damage to water resources and wetlands and the potential for increased sedimentation. The specifics of the RFFAs and present actions, such as the footprint, design, alignment, surface disturbance, are not known at this time. The specific number of stream crossings and the proximity of ground disturbance of any present actions or RFFAs are not known. As a result, the contributions of incremental direct and indirect impacts from the present actions or RFFAs to cumulative impacts are more qualitative than quantitative.

The levels of direct, indirect, and cumulative impacts are categorized as high, moderate, or low based on the thresholds defined in Section 3.2.2, Water Resources. If the direct and indirect impacts to water resources were determined to be none or negligible as a result of the Proposed Action or alternatives, there would be no contribution to the cumulative impacts to water resources. Likewise, there would be no contribution to cumulative impacts if there are no direct impacts from RFFAs or present actions within the geographic area of influence.

The evaluation of cumulative impacts to water resources addresses surface water and wetlands. Surface water consideration includes the water quality of streams and surface water drinking water sources areas. Wetlands include emergent, forested, and scrub-shrub wetlands. With effective implementation of design features incorporated as conditions of the ROW grant, adverse effects on groundwater are anticipated to be negligible as a result of the Proposed Action and alternatives. Therefore, there would be no contribution to groundwater cumulative impacts since there are no direct impacts from the Proposed Action and alternatives within the geographic area of influence. Groundwater cumulative impacts are not discussed any further in this section.

The following narrative summarizes the cumulative water resources impacts by segment and alternative. There are no RFFAs associated with impacts to water resources and wetlands in Segments 2 and 3 within the geographic area of influence.

Segment 1 – Morrow-Umatilla

The Proposed Action and alternatives, RFFAs, and present actions in Segment 1 are within the Middle Columbia-Lake Wallula, Willow, and Umatilla watersheds. The RFFAs within these watersheds would include the Coal Transfer Station, Ella Butte Wind Power Project, Longhorn Substation, Naval Weapons System Training Facility (NWSTF) Boardman, Perennial Wind Chaser Station, Rackspace Data Center, Saddle Butte Wind Park, and U.S. 730 Corridor Refinement Plan. The acres of short- and long-term impacts from the Proposed Action are based on total acres of this alternative in Morrow and Umatilla counties for comparison purposes. The landscape within Segment 1 has been heavily altered by farming practices, land development, and energy projects, with the exception of the eastern portion of the segment where it enters the Blue Mountains ecoregion.

Proposed Action-Surface Water

While the qualitative effects of stream disturbance on water quality would be the same regardless of the alternative, RFFA, or present action, the greater the number of crossings or acres of disturbance of intermittent and perennial streams would likely result in higher exposures to the risk of adverse water quality effects on surface waters. Construction activities and ground disturbance associated with the Proposed Action, present actions, and RFFAs could result in localized low to moderate direct and indirect short-term impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. These impacts would be minimized but not entirely eliminated by the conditions of the storm water pollution prevent plans and other typical design features. The eight RFFAs may impact approximately 31 streams. The Proposed Action would create approximately 91 stream crossings.

There are no effects to surface water drinking water source areas by the RFFAs because there are no source areas identified in the area where the actions are proposed. Approximately 122 acres of surface water drinking water source areas would be disturbed by the Proposed Action. The potential the effects to surface water drinking water source areas from present actions such as grazing and land development would be considered to be low impact because of the implementation of standard regulatory measures to minimize erosion and sedimentation.

Therefore, the direct and indirect short-term impacts to surface waters from the Proposed Action, present actions, and RFFAs would contribute incrementally to a moderate cumulative impact to surface water resources, due to increase of sedimentation to nearby surface-water resources.

Horn Butte Alternative-Surface Water

The Horn Butte Alternative would have the same effects to surface waters as the Proposed Action except that the Horn Butte Alternative would not impact surface water drinking water sources areas. Therefore, the incremental effect of the construction and operation of Horn Butte Alternative when added to the past, present, and RFFA would be a moderate adverse cumulative impact on surface waters.

Longhorn Alternative – Surface Water

The Longhorn Alternative would cross approximately 74 streams and the eight RFFAs may impact approximately 31 streams. Construction activities and ground disturbance associated with the Longhorn Alternative, present actions, and RFFAs could result in localized moderate direct and indirect short-term impacts to surface water.

There are no effects to surface water drinking water source areas by the RFFAs or the Longhorn Alternative because there are no source areas identified in the area where the actions or the Longhorn Alternative are proposed. The potential the effects to surface water drinking water source areas from present actions such as grazing and land development would be considered to be low impact because of the implementation of standard regulatory measures to minimize erosion and sedimentation.

Therefore, the direct and indirect short-term impacts to surface waters from the Longhorn Alternative, present actions, and RFFAs would contribute incrementally to a moderate adverse cumulative impact to surface water resources, due to increase of sedimentation to nearby surface-water resources.

Longhorn Variation – Surface Water

The Longhorn Variation would have the same effects to surface waters as the Longhorn Alternative. Therefore, the incremental effect of the construction and operation of Longhorn Variation when added to the past, present, and RFFA would be a moderate adverse cumulative impact on surface waters.

Proposed Action - Wetlands

The construction of the Proposed Action would result in moderate short-term (approximately 0.9 acres) and long-term (approximately 0.4 acres) impacts to wetlands. Short-term impacts would be primarily caused by the removal of vegetation and soil disturbance, but would not result in a loss of wetland acreage. The long-term moderate impacts would result in the loss of emergent wetlands and scrub-shrub wetlands in the geographic area of influence in Segment 1. The project components associated with present actions are not known at this time. All but 0.1 acres of the approximately 54.3 acres of wetlands in Morrow and Umatilla counties are on private lands, which may increase the potential for disturbance to the emergent, scrub-shrub, and forested wetlands by development activities. Potential impacts from present actions would likely be similar to the Proposed Action effects. However, the Proposed Action and present actions would be required to comply with the Clean Water Act, which would require any proposed actions to avoid and minimize any impacts to wetlands to the extent feasible as well as providing compensatory mitigation where impacts were unavoidable. With avoidance as feasible and compensatory mitigation where avoidance is not feasible, effects to wetlands are anticipated to be low. The construction of the RFFAs would not result in either short- or long-term impacts because there are no wetlands identified within 500 feet of the future actions within the geographic area of influence in Segment 1. Therefore, the direct and indirect short-term impacts to wetlands from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to wetlands.

Horn Butte Alternative- Wetlands

The construction of the Horn Butte Alternative would result in moderate short-term (approximately 0.4 acres) primarily caused by the removal of vegetation and soil disturbance, but would not result in a loss of wetland acreage. The long-term moderate impacts (approximately 0.3 acres) would result in the loss of emergent wetlands in the geographic area of influence in Segment 1. Potential impacts from present actions would likely be similar to the Proposed Action effects and would be considered to be moderate. However, the Proposed Action and present actions would be required to comply with the Clean Water Act and potential effects to wetlands are anticipated to be low. The construction of the RFFAs would not result in either short- or long-term impacts because there are no wetlands identified within 500 feet of the future actions within the geographic area of influence in Segment 1. Therefore, the direct and indirect short-term impacts to wetlands from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to wetlands.

Longhorn Alternative – Wetlands

The construction of the Longhorn Alternative would result in moderate short-term (approximately 0.8 acres) and long-term (approximately 0.1 acres) impacts to wetlands. Short-term impacts would be attributed to the removal of vegetation and soil disturbance, but would not result in a loss of wetland acreage. The long-term moderate impacts would result in the loss of emergent wetlands in the geographic area of influence in Segment 1. Potential impacts from present actions would likely be similar to the Proposed Action effects and would be considered to be low because of avoidance or providing compensatory mitigation where impacts were unavoidable in compliance with the Clean Water Act. The construction of the RFFAs would not result in either short- or long-term impacts because there are no wetlands identified within 500 feet of the future actions within the geographic area of influence in Segment 1. Therefore, the direct and indirect short-term impacts to wetlands from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to wetlands.

Longhorn Variation – Wetlands

The construction of the Longhorn Variation would result in no impacts to wetlands. Therefore there would be no incremental contribution to cumulative impact to wetlands from the Longhorn Variation.

Segment 2-Blue Mountains

The Proposed Action, Glass Hill Alternative, and present actions in Segment 2 are within the Umatilla, Upper Grande Ronde, and Powder watersheds. The acres of short- and long-term impacts from the Proposed Action are based on total acres of this alternative in Union County for comparison purposes. There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect water resources or wetlands.

Proposed Action and Glass Hill Alternative-Surface Water

The Proposed Action and Glass Hill Alternative would both cross approximately 24 streams and would likely result in localized low direct and indirect short-term impacts to surface water. There are no effects to surface water drinking water source areas by the Proposed Action or the Glass Hill Alternative because there are no source areas identified in the area where the Proposed Action or the Glass Hill Alternative are proposed. The potential the effects to surface water drinking water source areas from present actions such as grazing and land development would be considered to be low impact because of the implementation of standard regulatory measures to minimize erosion and sedimentation. Therefore, the direct and indirect short-term impacts to surface waters from the Proposed Action and Glass Hill Alternative would contribute incrementally to a low adverse cumulative impact to surface water resources, due to increase of sedimentation to nearby surface-water resources.

Proposed Action -Wetlands

The construction of the Proposed Action would result in moderate short-term (approximately 0.3 acres) and long-term (approximately 0.1 acres) impacts to emergent and scrub-shrub wetlands. The project components associated with present actions are not known at this time. All but 4 percent of the approximately 197.0 acres of wetlands in Union County are on private lands, which may increase the potential for disturbance to the emergent, scrub-shrub, and forested wetlands by development activities. However, the Proposed Action and present actions would be required to comply with the

Clean Water Act and potential effects to wetlands are anticipated to be low as a result of the regulatory process. Therefore, the direct and indirect short-term impacts to wetlands from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to wetlands within the geographic area of influence within Segment 2.

Glass Hill Alternative-Wetlands

The construction of the Glass Hill Alternative would result in no impacts to wetlands. Therefore there would be no incremental contribution to cumulative impact to wetlands from the Glass Hill Alternative.

Segment 3-Baker Valley

The Proposed Action, alternatives, and present actions in Segment 3 are within the Powder and Burnt watersheds. The acres of short- and long-term impacts from the Proposed Action are based on total acres of this alternative in Baker County for comparison purposes. There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect water resources or wetlands.

Proposed Action - Surface Water

Construction activities and ground disturbance associated with the Proposed Action and the present actions could result in localized low to direct and indirect short-term impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. These impacts would be minimized but not entirely eliminated by the conditions of the storm water pollution prevent plans and other typical design features. The Proposed Action would create approximately 42 stream crossings.

There are no effects to surface water drinking water source areas by the Proposed Action because there are no source areas that would be disturbed. The potential the effects to surface water drinking water source areas from present actions such as grazing and land development would be considered to be low impact because of the limited surface water drinking water source areas located within Baker and Union counties.

Therefore, the direct and indirect short-term impacts to surface waters from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to surface water resources.

Flagstaff and Burnt River Mountain Alternatives- Surface Waters

The Flagstaff and Burnt River Mountain alternatives and present actions would have the similar effects to surface waters as the Proposed Action. The Flagstaff and Burnt River Mountain alternatives would create approximately 27 and 32 stream crossings, respectively. Therefore, the incremental effect of the construction and operation of Flagstaff and Burnt River Mountain alternatives when added to the present actions would be a low adverse cumulative impact on surface waters.

Timber Canyon Alternatives – Surface Waters

The Timber Canyon Alternative and present actions could result in localized moderate to direct and indirect short-term impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. The Timber Canyon Alternative would result in approximately 131 stream crossings.

There are no effects to surface water drinking water source areas by the Timber Canyon because there are no source areas that would be disturbed. The potential the effects to surface water drinking water source areas from present actions would be considered to be low impact because of the limited surface water drinking water source areas located within Baker and Union counties.

Therefore, the direct and indirect short-term impacts to surface waters from the Timber Canyon and present actions would contribute incrementally to a moderate adverse cumulative impact to surface water resources, due to greater exposure to the risk of adverse water quality effects on surface waters with over a 100 stream crossings.

Proposed Action - Wetlands

The construction of the Proposed Action would result in moderate short-term (approximately 3.0 acres) and long-term (approximately 3.8 acres) impacts to emergent and scrub-shrub wetlands. The project components associated with present actions are not known at this time. All but 4 percent of the approximately 1,145 acres of wetlands in Baker County are on private lands, which may increase the potential for disturbance to the emergent, scrub-shrub, and forested wetlands from development. Potential impacts from present actions would likely be similar to the Proposed Action. However, the Proposed Action and present actions would be required to comply with the Clean Water Act and potential effects to wetlands are anticipated to be low. Therefore there would be incremental contribution to a low adverse cumulative impact to wetlands from the Proposed Action and present actions within the geographic area of influence within Segment 3.

Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives - Wetlands

The Flagstaff, Burnt River Mountain, and Timber Canyon alternatives would result in moderate short- and high long-term impacts to wetlands. The Flagstaff Alternative would impact approximately 7 acres short-term and 2.9 acres long-term, Burnt River Mountain would impact approximately 7 acres short-term and 3 acres long-term, and Timber Canyon would impact approximately 9 acres and 3 acres. The long-term high impacts would result in the loss of emergent, scrub-shrub, and forested wetlands in the geographic area of influence in Segment 3. Potential impacts from present actions would likely be similar to the alternatives' effects and would be considered to be moderate to high. However, the alternatives and present actions would be required to comply with the Clean Water Act, which would require any proposed actions to avoid and minimize any impacts to wetlands to the extent feasible as well as providing compensatory mitigation where impacts were unavoidable. With avoidance as feasible and compensatory mitigation where avoidance is not feasible, the short-term effects to wetlands are anticipated to be low and the long-term effects to be moderate. Therefore, the direct and indirect short-term impacts to wetlands from the Flagstaff, Burnt River Mountain, and Timber Canyon alternatives and present actions would contribute incrementally to moderate adverse cumulative impacts to wetlands.

Segment 4-Brogan Area

The Proposed Action and alternatives in Segment 4 are within the Bully, Burnt, Brownlee Reservoir, Willow, and Lower Malheur watersheds. The short- and long-term acres of wetlands for the Proposed Action are based on the acres for this alternative in Malheur County for comparison purposes. The RFFAs within these watersheds would include Lime Windfarms, Malheur Queen Placer, and Neal Hot Springs Geothermal. There would be no RFFAs within 0.5-mile of the Proposed Action or alternatives within the wetlands' geographic area of influence in Segment 4.

Proposed Action-Surface Water

The Proposed Action, present actions, and RFFAs could result in localized low direct and indirect short-term impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. The three RFFAs may impact approximately 2 streams and the Proposed Action would create approximately 57 stream crossings. There are no effects to surface water drinking water source areas by the RFFAs or the Proposed Action because there are no source areas identified within the geographic area of influence in Segment 4. The potential the effects to surface water drinking water source areas from present actions such as grazing and land development would be considered to be low impact because of the limited surface water drinking water source areas located within Baker and Malheur counties. Therefore, the direct and indirect short-term impacts to surface waters from the Proposed Action, present actions, and RFFAs would contribute incrementally to a low adverse cumulative impact.

Tub Mountain South and Willow Creek Alternatives-Surface Water

The Tub Mountain South and Willow Creek alternatives would have the similar effects to surface waters as the Proposed Action. The Tub Mountain South Alternative would impact approximately 75 streams and Willow Creek would impact approximately 58 streams. Therefore, the incremental effect of the construction and operation of Tub Mountain South and Willow Creek alternatives when added to the past, present, and RFFAs would be a low adverse cumulative impact on surface waters.

Proposed Action - Wetlands

The construction of the Proposed Action would result in moderate short-term (approximately 3.0 acres) and long-term (approximately1.0 acres) impacts to wetlands. Short-term impacts would be primarily caused by the removal of vegetation and soil disturbance, but would not result in a loss of wetland acreage. The long-term moderate impacts would result in the loss of emergent wetlands and scrub-shrub wetlands. The project components associated with present actions are not known at this time. Sixty-two percent of the approximately 252 acres of wetlands in Malheur County are on private lands, which may increase the potential for disturbance to the emergent, scrub-shrub, and forested wetlands. Potential impacts from present actions would likely be similar to the Proposed Action effects and would be considered to be moderate. However, the Proposed Action and present actions would be required to comply with the Clean Water Act and potential effects to wetlands are anticipated to be low as a result of the regulatory process. Therefore, the direct and indirect short-term impacts to wetlands from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to wetlands.

Willow Creek and Tub Mountain South Alternatives - Wetlands

The construction of the Willow Creek and Tub Mountain South alternatives would result in low short-term and long-term impacts to emergent, scrub-shrub, and forested wetlands. The Willow Creek Alternative would impact approximately 0.6 acres short-term and 0.2 acres long-term and the Tub Mountain South Alternative would impact approximately 1.5 acres and 1.0 acres. Potential impacts from present actions would likely be similar to the alternatives' effects and would be considered to be low even with compliance with the Clean Water Act because it is unlikely that all impacts can be mitigated completely. Therefore, the direct and indirect short-term impacts to wetlands from the Willow Creek and Tub Mountain South alternatives and present actions would contribute incrementally to low adverse cumulative impacts to wetlands.

Segment 5-Malheur

The Proposed Action, alternatives, present actions, and RFFAs in Segment 5 are within the Lower Malheur, Lower Owyhee, Burnt, and Middle Snake-Succor watersheds. The short- and long-term acres of wetlands for the Proposed Action are based on the acres for this alternative in Malheur County for comparison purposes. The RFFAs within these watersheds would include Huntington Windfarms and Grassy Mountain Gold Mine. There would be no RFFAs within 0.5-mile of the Proposed Action or alternatives within the wetlands' geographic area of influence in Segment 5.

Proposed Action-Surface Water

The Proposed Action, present actions, and RFFAs could result in localized low direct and indirect short-term impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. The two RFFAs may impact approximately 3 streams and the Proposed Action would create approximately 42 stream crossings. There are no effects to surface water drinking water source areas by the RFFAs or the Proposed Action because there are no source areas identified within the geographic area of influence in Segment 5. The potential the effects to surface water drinking water source areas from present actions such as grazing and land development would be considered to be low impact because of the limited surface water drinking water source areas located within Malheur County. Therefore, the direct and indirect short-term impacts to surface waters from the Proposed Action, present actions, and the two RFFAs would contribute incrementally to a low adverse cumulative impact.

Malheur S and Malheur A Alternatives- Surface Waters

The Malheur S and Malheur A alternatives, present actions, and the two RFFAs would have potentially greater effects to surface waters than the Proposed Action. The Malheur S Alternative would impact approximately 65 streams and Malheur A Alternative would impact approximately 64 streams.

Construction activities and ground disturbance associated with the two alternatives, present actions and the two RFFAs could result in localized impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. Therefore, the incremental effect of the construction and operation of Malheur S and Malheur A alternatives when added to the past, present, and RFFAs would be a moderate adverse cumulative impact on surface waters.

Double Mountain Alternative- Surface Waters

The Double Mountain Alternative, present actions, and the two RFFAs would have potentially less effects to surface waters than the Proposed Action. The Double Mountain Alternative would create approximately 12 stream crossings. Therefore, the incremental effect of the Double Mountain Alternative when added to the present actions, Huntington Windfarms, and Grassy Mountain Gold Mine effects would be a low adverse cumulative impact on surface waters.

Proposed Action - Wetlands

The construction of the Proposed Action would result in moderate short-term (approximately 3.0 acres) and long-term (approximately1.0 acres) impacts to wetlands. Short-term impacts would be primarily caused by the removal of vegetation and soil disturbance, but would not result in a loss of wetland acreage. The long-term moderate impacts would result in the loss of emergent wetlands. The project components associated with present actions are not known at this time. Sixty-two percent of the approximately 252 acres of wetlands in Malheur County are on private lands, which may increase the potential for disturbance to the emergent wetlands. Potential impacts from present actions would likely be similar to the Proposed Action effects and would be considered to be moderate. However, the Proposed Action and present actions would be required to comply with the Clean Water Act and potential effects to wetlands are anticipated to be low as a result of the regulatory process. The construction of the two RFFAs would not result in either short- or long-term impacts because there are no wetlands identified within 500 feet of the future actions within the geographic area of influence in Segment 5. Therefore, the direct and indirect short-term impacts to wetlands from the Proposed Action and present actions would contribute incrementally to a low adverse cumulative impact to wetlands.

Malheur S and Malheur A Alternatives- Wetlands

The construction of the Malheur S and Malheur A alternatives would result in low short-term and long-term impacts to emergent and scrub-shrub wetlands. The Malheur S and Malheur A alternatives would each impact approximately 1.0 acres short-term and 0.2 acres long-term. Potential impacts from present actions would likely be similar to the alternatives' effects and would be considered to be low even with compliance with the Clean Water Act because it is unlikely that all impacts can be mitigated completely. Therefore, the direct and indirect short-term impacts to wetlands from the Malheur S and Malheur A alternatives and present actions would contribute incrementally to low adverse cumulative impacts to wetlands.

SEGMENT 6—TREASURE VALLEY

The Proposed Action, present actions, and RFFAs in Segment 6 are within the Middle Snake-Succor watershed. The short- and long-term acres of wetlands for the Proposed Action are based on the acres for this alternative in Owyhee County for comparison purposes The RFFA within this watershed would include the Gateway West transmission line.

Proposed Action-Surface Water

The Proposed Action, present actions, and the Gateway West transmission line could result in localized moderate direct and indirect short-term impacts to surface water with the potential increase of erosion and sedimentation, with effects extending downstream. The Gateway West project may impact approximately 31 streams and the Proposed Action would create approximately 53 stream crossings. There are no known effects to surface water drinking water source areas by the Proposed Action or the Gateway West project because there have been no source areas identified by the state of Idaho. Therefore, the direct and indirect short-term impacts to surface waters from the Proposed Action, present actions, and the two RFFAs would contribute incrementally to a moderate adverse cumulative impact with over 80 streams potentially affected.

Proposed Action-Wetlands

Based on the direct and indirect impacts from the Proposed Action, the Gateway West project, and present action along with the requirements to comply with the Clean Water Act and potential effects to wetlands are anticipated to be low as a result of the regulatory process. Specific information on wetlands in Owhyee County for the geographic area of influence for the cumulative analysis is not available. However, the incremental effects of the Proposed Action along with present actions and the Gateway West project is anticipated to be a low adverse cumulative impact on forested wetlands.

3.3.4.3 VEGETATION

METHODOLOGY

The geographic area of influence for the analysis of cumulative impacts to vegetation resources is defined as the vegetation communities and ethnobotanical resources associated with them that are found within a 0.5 mile buffer on either side of the proposed project center line and within 50 feet of access roads and ancillary facilities. The geographic area of influence for federally listed, candidate and special status species and their suitable habitat are analyzed within 5 miles of the center line of the project. The geographic area of influence for noxious weed species are the counties where known to occur within the counties where the Proposed Action and alternatives would be located. Present actions and reasonably foreseeable future actions (RFFA) within this geographical area of influence were evaluated. The present actions and RFFAs are listed in Table 3-315. These are the actions considered in the cumulative impacts analysis for vegetation resources.

The past actions within the geographic area of influence have contributed to the existing environmental conditions, vegetation community composition, federal and state special status species, and noxious weed presence and are not separately analyzed as a contributing impact to present actions, RFFA, the Proposed Action, and alternatives to cumulative impacts.

The short-term and long-term effects from implementation of the B2H project would contribute cumulatively to the effects of past, present and reasonably foreseeable future actions in the analysis area to vegetation and noxious weeds. The criteria used to assign a low, moderate, or major level of cumulative impact are consistent with those used to assess direct and indirect impacts in Section 3.2.3 Vegetation. Cumulative impacts are represented in terms of low, moderate, and major based on a qualitative analysis of the RFFAs and present actions proposed or known to occur with the geographic area of influence for each segment. In several cases the cumulative impacts are consistent across vegetation resources for the alternatives within a particular segment. In these instances the alternatives are included in one discussion for the vegetation resource analyzed.

Segment 1 – Morrow - Umatilla

The Longhorn Substation and Naval Weapons System Training Facility (NWSTF) Boardman are the two RFFAs that would be relevant within the vegetation resources geographical area of influence associated with the Proposed Action and alternatives in Segment 1. The incremental contributions to cumulative impacts of the two RFFAs are discussed below in terms of their impact in conjunction with the Proposed Action and each of the alternatives for Segment 1.

Proposed Action

Vegetation Communities

The most dominant vegetation communities in Segment 1 are grasslands (including imperiled grasslands) and shrublands. The direct effect determination to these communities was determined to be low with the exception of a moderate residual effect to imperiled grassland communities. The imperiled community type is only within the geographic area of influence in small intermittent locations and does not represent a substantial component of the vegetation communities within the analysis area. The NWSTF Boardman is the only RFFA within the geographic area of influence for the Proposed Action. However, no expansion in the footprint of the facility is proposed and expansion of operations at the facility would not have any impact on the vegetation communities within the geographic area of influence. As a result, there would be no incremental contribution to cumulative impacts associated with the NWSTF Boardman.

The landscape surrounding the Proposed Action has been heavily altered by farming practices, land development, and energy projects, with the exception of the eastern portion of the Proposed Action where it enters the Blue Mountains ecoregion. Therefore, cumulative impact of the construction of the Proposed Action and the existing conditions created by the present actions would result in a low cumulative impact to vegetation communities in Segment 1.

Federally Listed, Candidate Species and Special Status Species

One BLM priority special status species, Laurent's milkvetch, is known to occur in Segment 1. The only documented population occurring within the geographic area of influence is located in western Umatilla County. There are no RFFAs located within the geographic area where this species occurs. Therefore, there would be no incremental contribution to cumulative impacts from RFFAs resulting from the Proposed Action.

Present actions that would have cumulative effects on special status species are primarily irrigated and dry land farming. These actions are not located within the geographic area of influence where the Laurent's milkvetch is known to occur. However, the expansion of present actions into the geographic area of influence would have a moderate cumulative impact to both individuals of the species and suitable habitat due to potential vegetation removal, habitat fragmentation, habitat alteration (loss of natural processes that support vegetation communities), and the potential for noxious weed infestation. Therefore, the cumulative impact to Laurent's milkvetch resulting from the Proposed Action and present actions would be moderate.

Noxious Weeds

The cumulative effects analysis area for noxious weeds includes the county or counties through which the Proposed Action passes. The initial direct and indirect noxious weeds effects of the Proposed Action would be high, but with effective implementation of design features during construction and operations, residual long-term effects would be low. There are currently no fewer than 17 RFFAs within Morrow County with several extending into Umatilla County. Construction of the RFFAs would lead to increased disturbance and opportunity for noxious weed infestations.

The present actions include substantial land and energy development, grazing, and extensive irrigated and dry land farming operations. Ground disturbance from development as well as seed distribution from livestock would have a high direct impact on the potential for distribution of noxious weeds.

Therefore, while the Proposed Action would be a small contributor, the long-term cumulative effects of noxious weeds in the geographic area of influence are considered to be major because of the potential for increased noxious weed infestation would be high.

Ethnobotanical Resources

Effects to ethnobotanical resources are dependent upon the effects to the vegetation communities they are associated with. Cumulative impacts to ethnobotanical resources by the Proposed Action and present actions would be consistent with the determination in the vegetation communities' discussion above.

HORN BUTTE ALTERNATIVE

Vegetation Communities

The RFFAs and present actions located within the geographic area of influence for the Horn Butte Alternative are the same as those associated with the Proposed Action. Therefore the incremental cumulative effects from RFFAs for vegetation communities associated with the Horn Butte Alternative would be consistent with those discussed above for the Proposed Action.

Federally Listed, Candidate Species and Special Status Species

The RFFAs and present actions located within the geographic area of influence for the Horn Butte Alternative are the same as those associated with the Proposed Action. Therefore the cumulative impacts for Laurent's milkvetch associated with the Horn Butte Alternative would be consistent with those discussed above for the Proposed Action.

Noxious Weeds

The RFFAs and present actions located within the geographic area of influence for the Horn Butte Alternative are the same as those associated with the Proposed Action. Therefore the cumulative impacts for noxious weeds associated with the Horn Butte Alternative would be consistent with those discussed above for the Proposed Action.

Ethnobotanical Resources

The RFFAs and present actions located within the geographic area of influence for the Horn Butte Alternative are the same as those associated with the Proposed Action. Therefore the cumulative impacts for ethnobotanical resources associated with the Horn Butte Alternative would be consistent with those discussed above for the Proposed Action.

Longhorn Alternative

Vegetation Communities

As previously discussed the most dominant vegetation communities in Segment 1 are grasslands (including imperiled grasslands) and shrublands. The direct effect determination to these communities was determined to be low with the exception of a moderate residual effect to imperiled grassland communities. As noted in the Proposed Action, the imperiled community type does not represent a substantial component of the vegetation communities within the analysis area. The RFFAs associated with the Longhorn Alternative include the NWSTF Boardman and the Longhorn substation. The Longhorn Substation would create a moderate direct impact because the loss of vegetation would result in vegetation community fragmentation and introduce the potential for vegetation succession by altering the natural processes of the community. Therefore, incremental effects of the Longhorn Substation, Longhorn Alternative, and present actions would result in a moderate cumulative impact on vegetation communities.

Federally Listed, Candidate Species and Special Status Species

The Longhorn Substation and NWSTF Boardman RFFAs are located within the geographic area of influence for the Longhorn Alternative. The present actions within the geographic area of influence are consistent with the Proposed Action. Given the location of the known occurrences of Laurent's milkvetch the cumulative impact on the species is consistent with the Proposed Action.

Noxious Weeds

The RFFAs and present actions located within the geographic area of influence for the Longhorn Alternative are the same as those associated with the Proposed Action. Therefore the cumulative impacts for noxious weeds associated with the Longhorn Alternative would be consistent with those discussed above for the Proposed Action.

Ethnobotanical Resources

The cumulative effects to ethnobotanical resources would be consistent with those described for the vegetation communities associated with the Proposed Action.

Longhorn Variation

Vegetation Communities

As previously discussed the most dominant vegetation communities in Segment 1 are grasslands (including imperiled grasslands) and shrublands. The direct effect determination to these communities was determined to be low with the exception of a moderate residual effect to imperiled grassland communities. As noted in the Proposed Action, the imperiled community type does not represent a substantial component of the vegetation communities within the analysis area.

Similar to the Longhorn Alternative, the two RFFAs associated with the Longhorn Variation are the Longhorn Substation and the NWSTF Boardman projects. The Longhorn Substation would create a moderate direct impact because the loss of vegetation would result in vegetation community fragmentation and introduce the potential for vegetation succession by altering the natural processes of the community. The present actions occurring within the geographic area of influence are consistent with those described for the Proposed Action. Therefore, incremental effects of the Longhorn Substation, Longhorn Variation, and present actions would result in a moderate cumulative impact on vegetation communities.

Federally Listed, Candidate Species and Special Status Species

The Longhorn Substation and NWSTF Boardman RFFAs are located within the geographic area of influence for the Longhorn Variation. The present actions within the geographic area of influence are consistent with the Proposed Action. Given the location of the known occurrences of Laurent’s milkvetch, the cumulative impact on the species is consistent with the Proposed Action.

Noxious Weeds

The RFFAs and present actions located within the geographic area of influence for the Longhorn Variation are the same as those associated with the Proposed Action. Therefore the cumulative impacts for noxious weeds associated with the Longhorn Variation would be consistent with those discussed above for the Proposed Action.

Ethnobotanical Resources

The cumulative effects to ethnobotanical resources would be consistent with those described for the vegetation communities associated with the Proposed Action.

Segment 2 – Blue Mountains

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect vegetation resources. Therefore, there would be no incremental effect contribution from RFFAs within Segment 2 to cumulative impacts to these resources. The direct effects for the Proposed Action and Glass Hill Alternative are consistent across the vegetation resources types, therefore the vegetation resources are not analyzed separately for each alternative.

Present actions in Segment 2 include irrigated and dry land farming, timber management, grazing, land development, transmission lines, roads, and pipelines, wind energy, and various forest management activities. Land development, and wind energy activities in this segment are a minor component of the landscape and do not fall within the geographic area of influence for Segment 2.

Vegetation Communities

The primary vegetation communities within Segment 2 include grasslands, woodlands/forest, shrublands, and agriculture. Present actions including dry land and irrigated farming activities are a minor component of the landscape and fall within the geographic area of influence in one location. The limited distribution of farming activity assessed with the added contribution of the Proposed Action would have a low direct impact on vegetation communities in Segment 2.

Timber management and forest management activities occur within this segment. Woody vegetation clearing associated with timber management as well as clearing of woodland/forest vegetation associated with the Proposed Action and Glass Hill Alternative construction and maintenance would have a high direct impact on imperiled woodland/forest communities and a moderate direct impact on all other woodland/forest and shrubland vegetation communities. The construction and maintenance of the Proposed Action and Glass Hill Alternative require clearing of vegetation in excess of present activities. The vegetation removal coupled with logging and prescribed burns would result in a high direct impact to the vegetation community fragmentation and potential successional changes in community composition.

Expansion of land development, wind energy and generating stations, and roads and pipelines within woodland/forest communities would have a high direct impact due to increased community fragmentation resulting from vegetation removal and potential introduction of noxious weeds to the landscape.

Therefore, both the Proposed Action and Glass Hill Alternative, present actions (primarily timber management), and the potential for expansion of present actions would have a major cumulative effect on vegetation communities in Segment 2.

Federally Listed, Candidate Species and Special Status Species

One federally listed endangered plant, Howell's spectacular thelypody, and two priority BLM special status species, Douglas' clover and Oregon semaphore grass, are analyzed in Segment 2. The direct effect to Howell's spectacular thelypody and Oregon semaphore grass would be low. Incremental impacts from present actions such as grazing, expansion of land development, roads, energy projects, and timber management along with the direct impacts associated with either the Proposed Action or Glass Hill Alternative would result in a moderate cumulative effect on Howell's spectacular thelypody and its suitable habitat.

Oregon semaphore grass is only found in association with the Proposed Action. In addition to potential loss of suitable habitat for this species through vegetation removal associated with expansion of present actions, these actions would increase the potential for invasion of noxious weeds and habitat fragmentation that could result in the loss of suitable habitat in the geographical area of interest. Therefore the Proposed Action and present actions would have a moderate cumulative impact on Oregon semaphore grass.

The direct effects to Douglas' clover by either the Proposed Action or Glass Hill Alternative would be considered moderate. Expansion of present actions and construction of the Proposed Action or Glass Hill Alternative could result in loss of individual plants associated with the expansion of present actions. Impacts to this species resulting from loss of suitable habitat from vegetation removal and potential vegetation community succession would result in a major cumulative impact to Douglas' clover.

Noxious Weeds

Currently 56 noxious weeds are known to occur within the direct effect analysis area in Segment 2. The direct effect of noxious weeds that would occur from construction and operation of the Proposed Action or the Glass Hill Alternative would be low. Ground disturbance associated with expansion of any of the present actions would increase potential for noxious weed infestation within the native vegetation communities in Segment 2. Expansion of present actions within the counties Segment 2 traverses would have a moderate cumulative impact when added with the direct effects from either the Proposed Action or Glass Hill Alternative.

Ethnobotanical Resources

Ethonobotanical resources in Segment 2 are primarily associated with woodland/forest communities. As previously discussed the direct impact to woodland/forest communities resulting from the Proposed Action and Glass Hill Alternative would be high. Therefore, the cumulative impacts to ethnobotanical resources associated with this community would be major.

Segment 3 – Baker Valley

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect vegetation communities, special status species, or ethnobotanical resources. Therefore, there would be no incremental effect contribution from RFFAs with the Timber Canyon, Flagstaff Alternative, or Burnt River Mountain alternatives, or the Proposed Action within Segment 3 to cumulative impacts to these resources.

Proposed Action and Flagstaff and Burnt River Mountain Alternatives Vegetation Communities

The present actions within the geographic area of influence occur in association with the Proposed Action and the Flagstaff and Burnt River Mountain alternatives consist primarily of irrigated farming. The farming areas are located primarily to the north and west of Baker City. Potential expansion of the current farming operations in conjunction with the Proposed Action and the Flagstaff and Burnt River Mountain alternatives would have moderate direct impacts to vegetation communities and ethnobotanical resources. Therefore, the Proposed Action and the Flagstaff and Burnt River Mountain alternatives and the potential for expansion of present actions would have a moderate cumulative effect on vegetation communities in Segment 3.

Timber Canyon Alternative

Vegetation Communities

Woody vegetation clearing associated with timber management as well as clearing of woodland/forest vegetation associated with the Timber Canyon Alternative would have a high direct impact on imperiled woodland/forest communities and a moderate direct impact on all other woodland/forest and shrubland vegetation communities. The construction and maintenance of the Timber Canyon Alternative would require the clearing of vegetation in excess of present activities. The vegetation removal coupled with logging and prescribed burns would result in a high level of vegetation community fragmentation and potential successional changes in community composition. Therefore, the Timber Canyon Alternative and the potential for expansion of present actions would have a major cumulative effect on vegetation communities in Segment 3.

Federally Listed, Candidate Species and Special Status Species

There are no known occurrences of federally listed or candidate species within the geographic area of influence for Segment 3, but there are two BLM priority special status species that may occur in this segment. There are no RFFAs within the area of influence therefore there would be no incremental effects on the two special status species, Malheur prince's plume and the Snake River goldenweed.

Vegetation removal activities occurring with timber management and the potential expansion of farming and grazing actions increases the potential for noxious weed infestation and habitat loss and fragmentation. The present actions and potential for expansion of present actions associated with the Proposed Action and the Flagstaff, Burnt River Mountain, and Timber Canyon alternatives would have a moderate cumulative effect on Malheur prince's plume and the Snake River goldenweed.

Noxious Weeds

The High Bar Upper and Lower Pine Creek Mine RFFA is the only RFFA located within the geographic area of influence for noxious weeds. The mine could have some potential to increase noxious weed invasions in the county by increasing weed presence along access roads and areas of disturbance associated with mine activities. The cumulative impact of the mine and the Proposed Action and the Flagstaff, Burnt River Mountain, and Timber Canyon alternatives would be moderate for the increased potential of noxious weed invasions within the county.

Ethnobotanical Resources

The cumulative impacts to ethnobotanical resources from the Proposed Action and the Flagstaff, Burnt River Mountain, and Timber Canyon alternatives and present actions in Segment 3 would be consistent with those described in the vegetation communities description above.

Segment 4 – Brogan Area

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect vegetation communities, special status species, or ethnobotanical resources. Therefore, there would be no incremental effect contribution from RFFAs with the Willow Creek or Tub Mountain South alternatives, or the Proposed Action within Segment 4 to cumulative impacts to these resources.

Present actions in Segment 4 would primarily include irrigated and dry land farming. The distribution of farming operations in this segment is limited to the river valleys and has likely been developed to the extent possible given topographic limitations. Any further development of agricultural operations would be limited. Therefore there would be no incremental effect contribution from present actions with the Willow Creek or Tub Mountain South alternatives, or the Proposed Action within Segment 4 to cumulative impacts to these resources.

Noxious Weeds

There are four RFFAs within the geographic area of influence for noxious weeds in Segment 4 and two additional actions that involve vegetation management and noxious weed treatment in Baker County. The four RFFAs consist of wind turbine installations, a mining operation, and geothermal operation. These actions together with the construction of the Proposed Action or the Willow Creek or Tub Mountain South alternatives would increase the potential for noxious weed infestation through ground disturbance, transport of noxious weed seeds on vehicles along new access roads, and introduction of noxious weeds to regions of the county not currently infested with some species. The cumulative impact from these actions would be moderate.

Segment 5 – Malheur

There are no identified RFFAs within the geographic area of influence within Segment 5 that would potentially affect vegetation communities, special status species, or ethnobotanical resources. Therefore, there would be no incremental effect contribution from the Double Mountain, Malheur S, or Malheur A alternatives, or the Proposed Action within Segment 5 to cumulative impacts to these resources.

Present actions in Segment 5 would primarily include irrigated and dry land farming as this area is remote and only well populated to the east of the Proposed Action. The distribution of farming operations in this segment is limited to the river valleys in the vicinity of Harper, which is outside the geographic area of influence, and has likely been developed to the extent possible given topographic limitations. Therefore, there would be not an incremental effect from present actions to cumulative impacts on vegetation resources in Segment 5.

Noxious Weeds

The Grassy Mountain Gold mine is the only RFFA within the two counties that Segment 5 passes through. As discussed previously, the present actions in the geographic analysis area are limited to certain geographic areas and unlikely to expand. The incremental effect resulting from present actions would be low. The RFFA, present actions, and the Proposed Action or Double Mountain, Malheur S, or Malheur A alternatives would increase the potential for noxious weed infestation through ground disturbance, transport of noxious weed seeds on vehicles along new access roads, and introduction of noxious weeds to regions of the county not currently infested with some species. Therefore, the cumulative impact from these actions would be moderate.

Segment 6 – Treasure Valley

Proposed Action

Vegetation Communities

One RFFA, the Gateway West transmission line, is proposed to originate from the terminus of the Proposed Action. Currently there is no selected route for the Gateway West line and the proposed alternatives would have varying impacts on vegetation communities. The proposed Gateway West alternatives would primarily impact shrubland communities within the geographic area of influence for this resource.. The direct effect on shrubland communities due to the Proposed Action would be low. It would be likely that the Gateway West transmission line would employ the same design and mitigation features to the project as would be applied to the Proposed Action essentially rendering the incremental effect of the Gateway West line an extension of the Proposed Action. The incremental direct effect of both transmission lines on this community type would be low.

Present actions in this area include operation and maintenance of the Hemingway substation as well as irrigated and dry land farming. The area has been developed and topography would likely limit further expansion of farming operations in this area. Therefore cumulative effect of the Proposed Action, the Gateway West transmission line, and present actions on vegetation communities in the geographic area of influence would be low.

Federally Listed, Candidate Species and Special Status Species

There are no federally listed or BLM priority special status species known to occur within the geographic area of influence for Segment 6. Therefore, there would be no cumulative effect of the

Proposed Action, the Gateway West transmission line, and present actions on any federally listed, candidate or special status species in the geographic area of influence.

Noxious Weeds

The Gateway West transmission line would increase the potential for noxious weed infestation through ground disturbance, transport of noxious weed seeds on vehicles along new access roads, and potential introduction of noxious weeds to regions of the county not currently infested with some species. Present actions primarily consisting of farming, land development, and energy development would have a moderate incremental effect with the Proposed Action. The cumulative impact of the Gateway West transmission line, Proposed Action, and present actions (including farming and development) would be moderate for this segment.

Ethnobotanical Resources

Cumulative effects to ethnobotanical resources would be consistent with the effects described for shrubland communities above.

3.3.4.4 WILDLIFE RESOURCES

METHODOLOGY

The geographic area of influence for the analysis of cumulative impacts to wildlife resources is defined in Table 3-313. The analysis area varies based on the wildlife resource analyzed. For example, the analysis area for migratory birds is within 0.5 mile of the Proposed Action and alternatives whereas the analysis area for Washington ground squirrel is defined as areas of suitable habitat within 5 miles of the Proposed Action and alternatives.

Present actions and reasonably foreseeable future actions (RFFA) within the cumulative impacts analysis area were evaluated. The present actions and RFFAs are identified in Table 3-314 and Table 3-315. For this analysis, cumulative impacts for the cumulative impacts analysis area are the combined direct effects of the present actions and RFFAs plus the direct impacts of the Proposed Action and alternatives.

The levels of direct, indirect, and cumulative impacts are described as high, moderate, or low. These cumulative impact levels are based on the thresholds defined in Section 3.2.4, Wildlife Resources. If the direct and indirect impacts to wildlife were considered to be none or negligible as a result of the construction and maintenance of the Proposed Action or alternatives, there would be no contribution to cumulative impacts to wildlife resources. In addition, there would be no cumulative impacts if there would be no direct impacts from present actions and RFFA because either there were no identified actions within the cumulative impact analysis area or the actions would result in negligible or no impacts. RFFAs that occur outside the cumulative impacts analysis areas (Table 3-313) of the Proposed Action and alternatives are not addressed in the analysis.

The past actions within the geographic area of influence have contributed to the existing environmental conditions for wildlife resources and are not appropriate to analyze as a contributing impact to present actions, RFFA, and the Proposed Action as cumulative impact. The past actions have been addressed in Section 3.2.4 as part of the affected environment and environmental consequences sections.

Reasonably foreseeable future actions in the analysis area that could result in modification of wildlife resources include wildfire management, timber management, agricultural and residential development, and wildlife habitat management. The wildlife habitats most susceptible to change include riparian areas; sagebrush dominated communities; and native grasslands.

Direct, indirect, and cumulative effects to wildlife habitat are the same as Direct, indirect, and cumulative effects to the vegetation communities discussed in Section 3.2.3 and the vegetation section above (Section 3.3.4.3), and are not discussed separately here.

Segment 1 – Morrow - Umatilla

There are several RFFAs within a 5-mile geographic area of influence associated with the Proposed Action and alternatives in Segment 1. The RFFAs associated with Segment 1 include the Longhorn Substation, Naval Weapons System Training Facility (NWSTF) Boardman, Coal Transfer Station, and Saddle Butte Wind Park. The cumulative impacts of the RFFAs are discussed below in terms of their impact in conjunction with the Proposed Action and each of the alternatives for Segment 1.

Proposed Action

Federally Proposed, Endangered, Threatened, and Candidate Species

Washington Ground Squirrel

Throughout much of its range, Washington ground squirrel (WGS) are threatened by the establishment and spread of invasive plant species, particularly cheatgrass, which alters available cover and food quantity and quality, and increase fire intervals. Additional threats include habitat fragmentation, recreational shooting, genetic isolation and drift, predation, disease, drought, and possible competition with related species in disturbed habitat at the periphery of their range. Because there would be a permanent loss of primary habitat for the WGS, and there is potential for mortality of individuals from direct and indirect effects, the Proposed Action would result in moderate to high impacts to the WGS. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate WGS habitat in portions of its range. Several RFFAs are located within suitable habitat for the Washington ground squirrel in the geographic area of influence for the Proposed Action in Segment 1, including NWSTF Boardman and Saddle Butte Wind Park. The present actions and the RFFAs would result in high direct impacts to the WGS because of the potential mortality of individuals and loss or modification of primary habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action when added to the past, present, and RFFAs would result in a high cumulative impact to the WGS and its habitat in Segment 1.

Special Status Species

As a result of the Proposed Action, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Proposed Action in Segment 1 could result in long-term moderate impacts to special status species. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate or impact habitat for special status species. Several RFFAs are located within suitable habitat for special status species within 5 miles of the Proposed Action in Segment 1, including NWSTF Boardman and Saddle Butte Wind Park. The present actions and the RFFAs would result in moderate direct impacts to the special status species because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action when added to the past, present, and RFFAs would result in a moderate cumulative impact to special status species in Segment 1.

Migratory Birds Including Raptors

It is well documented that power lines, communication towers, and wind generation facilities cause both direct and indirect moralities to migratory birds and raptors. Although raptors are known to use transmission towers as nesting substrate and as perches for use during hunting, the Proposed Action will add additional large scale power lines to areas where high densities of transmission lines and wind generation facilities already exist. Project design features associated with the Proposed Action that were created to reduce impacts to Washington ground squirrel, such as perch and nesting site deterrents, would, conversely, decrease nesting and hunting opportunities for raptors. As a result of the Proposed Action, removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect); therefore, the Proposed Action in Segment 1 could result in long-term moderate impacts to migratory birds. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate or impact habitat for migratory birds and raptors. No known RFFAs are located within the geographic area of influence for migratory birds (i.e., 0.5 mile from the Proposed Action centerline), though several RFFAs are located within the geographic area of influence for bald and golden eagles (i.e., 10 miles from the Proposed Action centerline). The present actions and the RFFAs would result in moderate direct impacts to the migratory birds including raptors because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action when added to the past, present, and RFFAs would result in a moderate cumulative impact to migratory birds and raptors in Segment 1.

Big Game

Modification of elk and mule deer winter range, and disturbance during a critical or sensitive period for these big game species could occur as a result of the Proposed Action; therefore, the Proposed Action in Segment 1 could result in long-term moderate impacts to big game. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate or impact habitat for big game. No RFFAs are located within elk and mule deer winter range in game management units crossed by Segment 1. Present actions would result in moderate direct impacts to big game because of the potential mortality of individuals, habitat loss, fragmentation, and disruption during a critical or sensitive period. Therefore, the incremental effects of the construction and operation of the Proposed Action when added to the past and present actions would result in a moderate cumulative impact to big game in Segment 1.

Horn Butte Alternative

Federally Proposed, Endangered, Threatened, and Candidate Species

Washington Ground Squirrel

Throughout much of its range, WGS are threatened by the establishment and spread of invasive plant species, particularly cheatgrass, which alters available cover and food quantity and quality, and increase fire intervals. Additional threats include habitat fragmentation, recreational shooting, genetic isolation and drift, predation, disease, drought, and possible competition with related species in disturbed habitat at the periphery of their range. Because there would be a permanent loss of primary habitat for the WGS, and there is potential for mortality of individuals from direct and indirect effects, the Horn Butte Alternative would result in high impacts to the WGS. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate WGS habitat in portions of its range. RFFAs impacting WGS within the geographic area of influence for the Horn Butte Alternative include the Saddle Butte Wind Park. The present actions and the RFFAs would result in high direct impacts to the WGS because of the potential mortality of individuals and loss or modification of primary habitat. Therefore, the incremental effects of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFAs would result in a high cumulative impact to the WGS and its habitat in Segment 1.

Special Status Species

As a result of the Horn Butte Alternative, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Horn Butte Alternative could result in long-term moderate impacts to special status species. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate or impact habitat for special status species. RFFAs impacting special status species within the geographic area of influence for the Horn Butte Alternative include the Saddle Butte Wind Park. The present actions and the RFFAs would result in moderate direct impacts to special status because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFAs would result in a moderate cumulative impact to special status species in Segment 1.

Migratory Birds Including Raptors

The direct and indirect effects to migratory birds and raptors from the Horn Butte Alternative, as well as the RFFAs and present actions located within the geographic area of influence for migratory birds and raptors for the Horn Butte Alternative are the same as those associated with the Proposed Action. Therefore, the cumulative impacts for migratory birds and raptors associated with the Horn Butte Alternative would be consistent with those discussed above for the Proposed Action.

Big Game

The RFFAs (i.e., none) and present actions located within the geographic area of influence for big game (i.e., elk and mule deer winter range in game management units crossed by Segment 1) for the Horn Butte Alternative are the same as those associated with the Proposed Action. Therefore the cumulative impacts for big game associated with the Horn Butte Alternative would be consistent with those discussed above for the Proposed Action.

Longhorn Alternative

Federally Proposed, Endangered, Threatened, and Candidate Species

Washington Ground Squirrel

Throughout much of its range, WGS are threatened by the establishment and spread of invasive plant species, particularly cheatgrass, which alters available cover and food quantity and quality, and increase fire intervals. Additional threats include habitat fragmentation, recreational shooting, genetic isolation and drift, predation, disease, drought, and possible competition with related species in disturbed habitat at the periphery of their range. Because there would be a permanent loss of primary habitat for the WGS, and there is potential for mortality of individuals from direct and indirect effects, the Longhorn Alternative would result in moderate to high impacts to the WGS. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate WGS habitat in portions of its range. RFFAs impacting WGS within the geographic area of influence for the Longhorn Alternative include the Longhorn Substation, NWSTF Boardman, and the Coal Transfer Station. The present actions and the RFFAs would result in high direct impacts to the WGS because of the potential mortality of individuals and loss or modification of primary habitat. Therefore, the incremental effects of the construction and operation of the Longhorn Alternative when added to the past, present, and RFFAs would result in a high cumulative impact to the WGS and its habitat in Segment 1.

Special Status Species

As a result of the Longhorn Alternative, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Longhorn Alternative could result in long-term moderate impacts to special status species. Present actions, including agricultural, residential, and wind power development, along with other forms of development, continue to eliminate or impact habitat for special status species. RFFAs impacting special status species within the geographic area of influence for the Longhorn Alternative include the Longhorn Substation, NWSTF Boardman, and the Coal Transfer Station. The present actions and the RFFAs would result in moderate direct impacts to special status because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Longhorn Alternative when added to the past, present, and RFFAs would result in a moderate cumulative impact to special status species in Segment 1.

Migratory Birds Including Raptors

The direct and indirect effects to migratory birds and raptors from the Longhorn Alternative, as well as the RFFAs and present actions located within the geographic area of influence for migratory birds and raptors for the Longhorn Alternative are the same as those associated with the Proposed Action. Therefore, the cumulative impacts for migratory birds and raptors associated with the Longhorn Alternative would be consistent with those discussed above for the Proposed Action.

Big Game

The RFFAs (i.e., none) and present actions located within the geographic area of influence for big game (i.e., elk and mule deer winter range in game management units crossed by Segment 1) for the Longhorn Alternative are the same as those associated with the Proposed Action. Therefore the cumulative impacts for big game associated with the Longhorn Alternative would be consistent with those discussed above for the Proposed Action.

Longhorn Variation

Federally Proposed, Endangered, Threatened, and Candidate Species

Washington Ground Squirrel

As with the Longhorn Alternative, RFFAs impacting WGS within the geographic area of influence for the Longhorn Variation include the Longhorn Substation, NWSTF Boardman, and the Coal Transfer Station. Additionally, present actions located within the geographic area of influence for the Longhorn Variation are similar to those associated with the Longhorn Alternative. The cumulative impacts for WGS associated with the Longhorn Variation would be consistent with those discussed above for the Longhorn Alternative.

Special Status Species

As with the Longhorn Alternative, RFFAs impacting special status species within the geographic area of influence for the Longhorn Variation include the Longhorn Substation, NWSTF Boardman, and the Coal Transfer Station. Additionally, present actions located within the geographic area of influence for the Longhorn Variation are similar to those associated with the Longhorn Alternative. The cumulative impacts to special status species associated with the Longhorn Variation would be consistent with those discussed above for the Longhorn Alternative.

Migratory Birds Including Raptors

The direct and indirect effects to migratory birds and raptors from the Longhorn Variation, as well as the RFFAs and present actions located within the geographic area of influence for migratory birds and raptors for the Longhorn Variation are the same as those associated with the Proposed Action. Therefore, the cumulative impacts for migratory birds and raptors associated with the Longhorn Variation would be consistent with those discussed above for the Proposed Action.

Big Game

The RFFAs (i.e., none) and present actions located within the geographic area of influence for big game (i.e., elk and mule deer winter range in game management units crossed by Segment 1) for the Longhorn Variation are the same as those associated with the Proposed Action. Therefore the cumulative impacts for big game associated with the Longhorn Variation would be consistent with those discussed above for the Proposed Action.

Segment 2 – Blue Mountains

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect wildlife resources. Therefore, there would be no direct effects and no incremental effect contribution to cumulative impacts from RFFAs for the Glass Hill Alternative or the Proposed Action within Segment 2.

Present actions in Segment 2 include irrigated and dry land farming, timber management, grazing, land development, transmission lines, roads, pipelines, wind energy, and various forest management activities. Land development and wind energy activities in this segment are a minor component of the landscape and do not fall within the geographic area of influence for this segment.

The Present actions analyzed for the Glass Hill Alternative are the same as those analyzed for the Proposed Action, therefore the wildlife resources are not analyzed separately for each alternative in this segment.

Federally Proposed, Endangered, Threatened, and Candidate Species

Greater Sage-Grouse

Greater Sage-Grouse numbers have declined rangewide. Population declines have coincided with a decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004). In accordance with BLM WO IM 2012-043 compensatory mitigation for any Project-related impacts on Greater Sage-Grouse or Greater Sage-Grouse habitats would be provided by the applicant. For the selected route for the Project (i.e., Agency Preferred Alternative), the BLM, USFS, ODFW, IDFG, and USFWS will determine the amount, type, and location of off-site mitigation required to avoid or minimize short- and long-term impacts of the Project on Greater Sage-Grouse (Appendix D and Appendix E). Because there would be fragmentation and modification of habitat for Greater Sage-Grouse from direct and indirect effects, the Proposed Action and the Glass Hill Alternative would result in high impacts to Greater Sage-Grouse. Present actions, including dry land farming, timber management, grazing, transmission lines, roads, and pipelines, continue to impact Greater Sage-Grouse or eliminate Greater Sage-Grouse habitat in Segment 2. Present actions have resulted in high impacts to the Greater Sage-Grouse because of the loss or fragmentation of habitat, disturbance during sensitive periods, and potential for mortality and lek abandonment. Therefore, the incremental effects of the construction and operation of the Proposed Action and Glass Hill Alternative when added to the past and present actions would result in a high cumulative impact to the Greater Sage-Grouse and its habitat in Segment 2.

A decision on the Proposed Plan from the Oregon Sub-Region Greater Sage-Grouse RMP Amendment EIS planning effort is expected in 2015. The Proposed Plan will implement land use allocations, infrastructure development buffers and limitations, and areal disturbance caps that are intended to conserve and enhance Greater Sage-Grouse populations in Oregon into the foreseeable future.

The analysis of cumulative effects on Greater Sage-Grouse assumes that off-site mitigation required for the Proposed Action and other future projects authorized by BLM that may affect the Baker Greater Sage-Grouse population will be sufficient and effective in maintaining or enhancing habitat for the Baker Greater Sage-Grouse population as required under BLM WO IM 2012-43. Consequently, the cumulative effects of the Proposed Action and Glass Hill Alternative, in addition to past and present actions are not expected to result in diminished Greater Sage-Grouse habitat quality or quantity or result in a decrease in the Baker Greater Sage-Grouse population.

Special Status Species

As a result of the Proposed Action and all alternatives in Segment 2, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Proposed Action and all alternatives in Segment 2 could result in long-term moderate impacts to special status species. Present actions, including dry land farming, timber management, grazing, transmission lines, roads, pipelines, and forest management activities, continue to eliminate or impact habitat for special status species. Expansion of land development, wind energy and generating stations, and roads and pipelines would have additional incremental effects to special status species. The present actions would result in moderate direct impacts to the special status species because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 2 when added to the past and present actions would result in a moderate cumulative impact to special status species in Segment 2.

Migratory Birds Including Raptors

It is well documented that power lines, communication towers, and wind generation facilities cause both direct and indirect moralities to migratory birds and raptors. Project design features associated with the Proposed Action and all alternatives in Segment 2 that were created to reduce impacts to Greater Sage-Grouse, such as perch and nesting site deterrents, would decrease nesting and hunting opportunities for raptors. As a result of the Proposed Action and all alternatives in Segment 2, removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect); therefore, the Proposed Action and all alternatives in Segment 2 could result in long-term moderate impacts to migratory birds. Present actions, including dry land farming, timber management, grazing, transmission lines, roads, pipelines, and forest management activities, continue to eliminate or impact habitat for migratory birds and raptors. No known RFFAs are located within the geographic area of influence for migratory birds (i.e., 0.5 mile from the Proposed Action and alternative centerlines) or bald and golden eagles (i.e., 10 miles from the Proposed Action and alternative centerlines). The present actions would result in moderate direct impacts to the migratory birds and raptors because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 2 when added to the past, present, and RFFAs would result in a moderate cumulative impact to migratory birds and raptors in Segment 2.

Big Game

Modification of elk and mule deer winter range, and disturbance during a critical or sensitive period for these big game species could occur as a result of the Proposed Action and Glass Hill Alternative in Segment 2; therefore, the Proposed Action and Glass Hill Alternative Segment 2 could result in long-term moderate impacts to big game. Present actions, including dry land farming, timber management, grazing, transmission lines, roads, pipelines, and forest management activities, continue to eliminate or impact habitat for big game. No RFFAs are located within elk and mule deer winter range in game management units crossed by Segment 2. Present actions would result in moderate direct impacts to big game because of the potential mortality of individuals, habitat loss, fragmentation, and disruption during a critical or sensitive period. Therefore, the incremental effects of the construction and operation of the Proposed Action or Glass Hill Alternative when added to the past and present actions would result in a moderate cumulative impact to big game in Segment 2.

Segment 3 – Baker Valley

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect wildlife resources. Therefore, there would be no cumulative impacts from RFFAs and no incremental effect contribution from the Flagstaff Alternative, Burnt River Mountain Alternative, or the Proposed Action within Segment 3. Present actions in Segment 3 are identified in Table 3-314. The Present actions analyzed are the same for the Proposed Action and all alternatives, therefore the wildlife resources are not analyzed separately for each alternative in this segment.

Federally Proposed, Endangered, Threatened, and Candidate Species

Greater Sage-Grouse

Greater Sage-Grouse numbers have declined rangewide. Population declines have coincided with a decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004). In accordance with BLM WO IM 2012-043 compensatory mitigation for any Project-related impacts on Greater Sage-Grouse or Greater Sage-Grouse habitats would be provided by the applicant. For the selected route for the Project (i.e., Agency Preferred

Alternative), the BLM, USFS, ODFW, IDFG, and USFWS will determine the amount, type, and location of off-site mitigation required to avoid or minimize short- and long-term impacts of the Project on Greater Sage-Grouse (Appendix D and Appendix E). Because there would be fragmentation and modification of habitat for Greater Sage-Grouse, and there is potential for direct mortality of individuals and lek abandonment from direct and indirect effects, the Proposed Action and all alternatives in Segment 3 would result in high impacts to Greater Sage-Grouse. Present actions, including irrigated farming, grazing, and timber management, continue to impact Greater Sage-Grouse or eliminate Greater Sage-Grouse habitat in Segment 3. Present actions have resulted in high impacts to the Greater Sage-Grouse because of the loss or fragmentation of habitat, disturbance during sensitive periods, and potential for mortality and lek abandonment. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 3 when added to the past and present actions would result in a high cumulative impact to the Greater Sage-Grouse and its habitat in Segment 3.

A decision on the Proposed Plan from the Oregon Sub-Region Greater Sage-Grouse RMP Amendment EIS planning effort is expected in 2015. The Proposed Plan will implement land use allocations, infrastructure development buffers and limitations, and areal disturbance caps that are intended to conserve and enhance Greater Sage-Grouse populations in Oregon into the foreseeable future.

The analysis of cumulative effects on Greater Sage-Grouse assumes that off-site mitigation required for the Proposed Action and all alternatives in Segment 3 and other future projects authorized by BLM that may affect the Baker Greater Sage-Grouse population will be sufficient and effective in maintaining or enhancing habitat for the Baker Greater Sage-Grouse population as required under BLM WO IM 2012-43. Consequently, the cumulative effects of the Proposed Action and all alternatives in Segment 3, in addition to past and present actions are not expected to result in diminished Greater Sage-Grouse habitat quality or quantity or result in a decrease in the Baker Greater Sage-Grouse population.

Special Status Species

As a result of the Proposed Action and all alternatives in Segment 3, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to special status species. Present actions, including irrigated farming, grazing, and timber management, continue to eliminate or impact habitat for special status species in Segment 3. Vegetation removal activities occurring with timber management and the potential expansion of farming and grazing actions increases the potential for noxious weed infestation and habitat loss and fragmentation for special status species. The present actions would result in moderate direct impacts to the special status species because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 3 when added to the past and present actions would result in a moderate cumulative impact to special status species in Segment 3.

Migratory Birds Including Raptors

It is well documented that power lines, communication towers, and wind generation facilities cause both direct and indirect moralities to migratory birds and raptors. Project design features associated with the Proposed Action and all alternatives in Segment 3 that were created to reduce impacts to Greater Sage-Grouse, such as perch and nesting site deterrents, would decrease nesting and hunting opportunities for raptors. As a result of the Proposed Action and all alternatives in Segment 3, removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect); therefore, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to migratory birds. Present actions, including irrigated farming, grazing, and timber management, continue to eliminate or impact habitat for migratory birds and raptors. No known RFFAs are located within the geographic area of influence for migratory birds (i.e., 0.5 mile from the Proposed Action and alternative centerlines) or bald and golden eagles (i.e., 10 miles from the Proposed Action and alternative centerlines). The present actions would result in moderate direct impacts to the migratory birds and raptors because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 3 when added to the past, present, and RFFAs would result in a moderate cumulative impact to migratory birds and raptors in Segment 3.

USFS Management Indicator Species

The Proposed Action and Timber Canyon Alternative would result in moderate impacts to management indicator species because individuals may be impacted (e.g., increased predation due to introduction of predatory perches, habitat loss, snag removal, disturbance during breeding), but would not result in a population- or species-level effect. Present actions within the geographic area of influence for management indicator species includes mostly irrigated farming and grazing for the Proposed Action and timber management activities along the Timber Canyon Alternative. Farming practices occurring within the geographic area of analysis have the potential to expand in the future, although to a limited extent given the topographic limitations in the locations of these routes. No RFFAs are located within management indicator species habitat within the geographic areas of influence for the Proposed Action and Timber Canyon Alternative. Present actions have resulted in habitat loss and fragmentation for management indicator species but not to a population- or species-level effect; therefore, present actions have resulted in moderate direct effects to management indicator species. Therefore, the incremental effects of the construction and operation of the Proposed Action and Timber Canyon Alternative when added to the past, present, and RFFAs would result in a moderate cumulative impact to management indicator species.

Big Game

Modification of big game winter range and disturbance during a critical or sensitive period for elk, mule deer, and bighorn sheep could occur as a result of the Proposed Action and all alternatives (Burnt River Mountain Alternative only for bighorn sheep) in Segment 3; therefore, the Proposed Action and all alternatives in Segment 3 could result in long-term moderate impacts to big game. Present actions, including irrigated farming, grazing, and timber management, continue to eliminate or impact habitat for big game. No RFFAs are located within elk and mule deer winter range or occupied bighorn sheep habitat in game management units crossed by Segment 3. Present actions would result in moderate direct impacts to big game because of habitat loss, fragmentation, and disruption during a critical or sensitive period. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 3 when added to the past and present actions would result in a moderate cumulative impact to big game in Segment 3.

Segment 4 – Brogan Area

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect wildlife resources. Therefore, there would be no cumulative impacts from RFFAs and no incremental effect contribution from the Willow Creek Alternative, Tub Mountain Alternative, Proposed Rebuild, or the Proposed Action within Segment 4.

Present actions in Segment 4 would primarily include irrigated and dry land farming. The distribution of farming operations in this segment is limited to the river valleys and has likely been developed to the extent possible given topographic limitations. Any further development of agricultural operations would be limited. The Present actions analyzed are the same for the Proposed Action and all alternatives, therefore the wildlife resources are not analyzed separately for each alternative in this segment.

Federally Proposed, Endangered, Threatened, and Candidate Species

Greater Sage-Grouse

Greater Sage-Grouse numbers have declined rangewide. Population declines have coincided with a decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004). In accordance with BLM WO IM 2012-043 compensatory mitigation for any Project-related impacts on Greater Sage-Grouse or Greater Sage-Grouse habitats would be provided by the applicant. For the selected route for the Project (i.e., Agency Preferred Alternative), the BLM, USFS, ODFW, IDFG, and USFWS will determine the amount, type, and location of off-site mitigation required to avoid or minimize short- and long-term impacts of the Project on Greater Sage-Grouse (Appendix D and Appendix E). Because there would be fragmentation and modification of habitat for Greater Sage-Grouse, and there is potential for mortality of individuals from indirect effects, the Proposed Action and all alternatives in Segment 4 would result in high impacts to Greater Sage-Grouse. Present actions, including mostly irrigated and dry land farming, continue to impact Greater Sage-Grouse or eliminate Greater Sage-Grouse habitat in Segment 4. Present actions have resulted in high impacts to the Greater Sage-Grouse because of the loss or fragmentation of habitat, disturbance during sensitive periods, and potential for mortality. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 4 when added to the past and present actions would result in a high cumulative impact to the Greater Sage-Grouse and its habitat in Segment 4.

A decision on the Proposed Plan from the Oregon Sub-Region Greater Sage-Grouse RMP Amendment EIS planning effort is expected in 2015. The Proposed Plan will implement land use allocations, infrastructure development buffers and limitations, and areal disturbance caps that are intended to conserve and enhance Greater Sage-Grouse populations in Oregon into the foreseeable future.

The analysis of cumulative effects on Greater Sage-Grouse assumes that off-site mitigation required for the Proposed Action and all alternatives in Segment 4 and other future projects authorized by BLM that may affect the Northern Great Basin Greater Sage-Grouse population will be sufficient and effective in maintaining or enhancing habitat for the Northern Great Basin Greater Sage-Grouse population as required under BLM WO IM 2012-43. Consequently, the cumulative effects of the Proposed Action and all alternatives in Segment 4, in addition to past and present actions are not expected to result in diminished Greater Sage-Grouse habitat quality or quantity or result in a decrease in the Northern Great Basin Greater Sage-Grouse population.

Special Status Species

As a result of the Proposed Action and all alternatives in Segment 4, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to special status species. Present actions, including mostly irrigated and dry land farming, continue to eliminate or impact habitat for special status species in Segment 4. The present actions have resulted in moderate direct impacts to special status species because of the loss and fragmentation of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 4 when added to the past and present actions would result in a moderate cumulative impact to special status species in Segment 4.

Migratory Birds Including Raptors

It is well documented that power lines, communication towers, and wind generation facilities cause both direct and indirect moralities to migratory birds and raptors. Project design features associated with the Proposed Action and all alternatives in Segment 4 that were created to reduce impacts to Greater Sage-Grouse, such as perch and nesting site deterrents, would decrease nesting and hunting opportunities for raptors. As a result of the Proposed Action and all alternatives in Segment 4, removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect); therefore, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to migratory birds. Present actions, including mostly irrigated and dry land farming, continue to eliminate or impact habitat for migratory birds and raptors. No known RFFAs are located within the geographic area of influence for migratory birds (i.e., 0.5 mile from the Proposed Action and alternative centerlines) or bald and golden eagles (i.e., 10 miles from the Proposed Action and alternative centerlines). Present actions would result in moderate direct impacts to the migratory birds and raptors because of the loss and fragmentation of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 4 when added to the past, present, and RFFAs would result in a moderate cumulative impact to migratory birds and raptors in Segment 4.

Big Game

Modification of big game winter range and disturbance during a critical or sensitive period for elk, mule deer, and pronghorn could occur as a result of the Proposed Action and all alternatives in Segment 4; therefore, the Proposed Action and all alternatives in Segment 4 could result in long-term moderate impacts to big game. Present actions, including mostly irrigated and dry land farming, continue to eliminate or impact habitat for big game. No RFFAs are located within elk, mule deer, and pronghorn winter range or occupied bighorn sheep habitat in game management units crossed by Segment 4. Present actions would result in moderate direct impacts to big game because of the loss and fragmentation of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 4 when added to the past and present actions would result in a moderate cumulative impact to big game in Segment 4.

Segment 5 – Malheur

One RFFA occurs within the vicinity of Segment 5 in Malheur County, the Grassy Mountain Gold Mine. Present actions in Segment 5 would primarily include irrigated and dry land farming as this area is remote and only well-populated farther east of the Proposed Action. Agricultural lands occur within the geographic area of influence for the Proposed Action and all alternatives in Segment 5, though the acreage of agricultural lands present is much larger for the Proposed Action compared to all other alternatives.

Federally Proposed, Endangered, Threatened, and Candidate Species

Columbia Spotted Frog

Habitat degradation and fragmentation has resulted from agricultural development, intensive livestock grazing, spring development, urbanization, and mining activities. Additional threats to this species include predation by nonnative species (e.g., bullfrog) and possibly climate change (NatureServe 2010). Because there could be direct mortality and a permanent loss of habitat, the Proposed Action and all alternatives in Segment 5 would result in high impacts to the Columbia spotted frog. Present actions, including irrigated and dry land farming, continue to impact Columbia spotted frog or eliminate Columbia spotted frog habitat. One RFFA, the Grassy Mountain Gold Mine, would be located within the geographic area of influence for the Malheur S Alternative only. The present and the Grassy Mountain Gold Mine would result in high direct impacts to the Columbia spotted frog because of the potential mortality of individuals and loss or modification of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 5 when added to the past, present, and the Grassy Mountain Gold Mine would result in a high cumulative impact to the Columbia spotted frog and its habitat in Segment 5. Wetland mitigation measures and project design criteria should aid in reducing cumulative impacts over time.

Greater Sage-Grouse

Greater Sage-Grouse numbers have declined rangewide. Population declines have coincided with a decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004). In accordance with BLM WO IM 2012-043 compensatory mitigation for any Project-related impacts on Greater Sage-Grouse or Greater Sage-Grouse habitats would be provided by the applicant. For the selected route for the Project (i.e., Agency Preferred Alternative), the BLM, USFS, ODFW, IDFG, and USFWS will determine the amount, type, and location of off-site mitigation required to avoid or minimize short- and long-term impacts of the Project on Greater Sage-Grouse (Appendix D and Appendix E). Because there would be fragmentation and modification of habitat for Greater Sage-Grouse, and there is potential for mortality of individuals from indirect effects, the Proposed Action and all alternatives in Segment 5 would result in high impacts to Greater Sage-Grouse. Present actions, including irrigated and dry land farming, continue to impact Greater Sage-Grouse or eliminate Greater Sage-Grouse habitat. One RFFA, the Grassy Mountain Gold Mine, would be located within the geographic area of influence for the Malheur S Alternative. This gold mine is located in PGH. The construction and operation of the gold mine would result in impacts to the Greater Sage-Grouse, including habitat loss, loss of PGH, fragmentation, and disturbance during sensitive periods. The present actions and the RFFA would result in high direct impacts to Greater Sage-Grouse because of the loss or fragmentation of habitat, disturbance during sensitive periods, and potential for mortality. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 5 when added to the past and present actions and the Grassy Mountain Gold Mine would result in a high cumulative impact to the Greater Sage-Grouse and its habitat in Segment 5.

A decision on the Proposed Plan from the Oregon Sub-Region Greater Sage-Grouse RMP Amendment EIS planning effort is expected in 2015. The Proposed Plan will implement land use allocations, infrastructure development buffers and limitations, and areal disturbance caps that are intended to conserve and enhance Greater Sage-Grouse populations in Oregon into the foreseeable future.

The analysis of cumulative effects on Greater Sage-Grouse assumes that off-site mitigation required for the Proposed Action and all alternatives in Segment 5 and other future projects authorized by BLM that may affect the Northern Great Basin Greater Sage-Grouse population will be sufficient and effective in maintaining or enhancing habitat for the Northern Great Basin Greater Sage-Grouse population as required under BLM WO IM 2012-43. Consequently, the cumulative effects of the Proposed Action and all alternatives in Segment 5, in addition to past, present, and the Grassy Mountain Gold Mine, are not expected to result in diminished Greater Sage-Grouse habitat quality or quantity or result in a decrease in the Northern Great Basin Greater Sage-Grouse population.

Special Status Species

As a result of the Proposed Action and all alternatives in Segment 5, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to special status species. Present actions, including irrigated and dry land farming, continue to eliminate or impact habitat for special status species. There is one RFFA, the Grassy Mountain Gold Mine, in Segment 5; it is located within the geographic area of influence for the

Malheur S Alternative only. Due to the gold mine in the analysis area for the Malheur S Alternative and the large acreage of agricultural lands in the analysis area for the Proposed Action, there would be more cumulative impacts to special status species from the Proposed Action and the Malheur S Alternative compared to a lower level of cumulative impacts to special status species in the analysis areas for the Double Mountain and Malheur A alternatives. The present actions and the RFFAs would result in moderate direct impacts to the special status species because of the potential mortality of individuals, habitat loss and fragmentation, and disturbance during sensitive periods. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 5 when added to the past and present actions and the Grassy Mountain Gold Mine would result in a moderate cumulative impact to special status species in Segment 5.

Migratory Birds Including Raptors

It is well documented that power lines, communication towers, and wind generation facilities cause both direct and indirect moralities to migratory birds and raptors. Project design features associated with the Proposed Action and all alternatives in Segment 5 that were created to reduce impacts to Greater Sage-Grouse, such as perch and nesting site deterrents, would decrease nesting and hunting opportunities for raptors. As a result of the Proposed Action and all alternatives in Segment 5, removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect); therefore, the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to migratory birds. Present actions, including irrigated and dry land farming, continue to eliminate or impact habitat for migratory birds and raptors. There are no RFFAs in the geographic area of influence for the Proposed Action and all alternatives for migratory birds. However, there is one RFFA in Segment 5, the Grassy Mountain Gold Mine, located within the geographic area of influence for bald and golden eagles, associated with the Malheur S Alternative only. Due to the gold mine in the analysis area for the Malheur S Alternative and the large acreage of agricultural lands in the analysis area for the Proposed Action, there would be more cumulative impacts to eagles from the Proposed Action and the Malheur S Alternative compared to a lower level of cumulative impacts to eagles in the analysis areas for the Double Mountain and Malheur A alternatives. Present and RFFA would result in moderate direct impacts to the migratory birds and raptors because of the loss and fragmentation of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 5 when added to the past and present actions and the Grassy Mountain Gold Mine would result in a moderate cumulative impact to migratory birds and raptors in Segment 5.

Big Game

Modification of mule deer and pronghorn winter range and disturbance during a critical or sensitive period for these big game species could occur as a result of the Proposed Action and all alternatives in Segment 5; therefore, the Proposed Action and all alternatives in Segment 5 could result in long-term moderate impacts to big game. Present actions, including irrigated and dry land farming, continue to eliminate or impact habitat for big game. No RFFAs are located within mule deer and pronghorn winter range in game management units crossed by Segment 5. Present actions would result in moderate direct impacts to big game because of the loss and fragmentation of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action and all alternatives in Segment 5 when added to the past and present actions would result in a moderate cumulative impact to big game in Segment 5.

Segment 6 – Treasure Valley

One RFFA occurs within the vicinity of Segment 6, the Gateway West transmission line.

Present actions in this area include operation and maintenance of the Hemingway substation as well as irrigated and dry land farming. The area surrounding the Proposed Action geographic area of influence has been developed and topography will likely limit further expansion of farming operations in this area. The incremental contribution to cumulative effects of present actions would be low.

Federally Proposed, Endangered, Threatened, and Candidate Species

Columbia Spotted Frog

Habitat degradation and fragmentation has resulted from agricultural development, intensive livestock grazing, spring development, urbanization, and mining activities. Additional threats to this species include predation by nonnative species (e.g., bullfrog) and possibly climate change (NatureServe 2010). Because there could be direct mortality and a permanent loss of habitat, the Proposed Action in Segment 6 would result in high impacts to the Columbia spotted frog. Present actions, including operation and maintenance of the Hemingway substation as well as irrigated and dry land farming, continue to impact Columbia spotted frog or eliminate Columbia spotted frog habitat. One RFFA, the Gateway West transmission line, would be located within the geographic area of influence for the Proposed Action. The present and RFFAs would result in high direct impacts to the Columbia spotted frog because of the potential mortality of individuals and loss or modification of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action in Segment 6 when added to the past, present, and RFFAs would result in a high cumulative impact to the Columbia spotted frog and its habitat in Segment 6. Wetland mitigation measures and project design criteria should aid in reducing cumulative impacts over time.

Greater Sage-Grouse

Greater Sage-Grouse numbers have declined rangewide. Population declines have coincided with a decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004). In accordance with BLM WO IM 2012-043 compensatory mitigation for any Project-related impacts on Greater Sage-Grouse or Greater Sage-Grouse habitats would be provided by the applicant. For the selected route for the Project (i.e., Agency Preferred Alternative), the BLM, USFS, ODFW, IDFG, and USFWS will determine the amount, type, and location of off-site mitigation required to avoid or minimize short- and long-term impacts of the Project on Greater Sage-Grouse (Appendix D and Appendix E). Because there would be a permanent loss of habitat for Greater Sage-Grouse, the Proposed Action in Segment 6 would result in high impacts to

Greater Sage-Grouse. Present actions, including operation and maintenance of the Hemingway substation as well as irrigated and dry land farming, continue to impact Greater Sage-Grouse or eliminate Greater Sage-Grouse habitat. There is one RFFA, the Gateway West transmission line, in Segment 6. The present actions and the Gateway West transmission line would result in high direct impacts to Greater Sage-Grouse because of the loss or fragmentation of habitat. Therefore, the incremental effects of the construction and operation of the Proposed Action in Segment 6 when added to the past and present actions and the Gateway West transmission line would result in a high cumulative impact to the Greater Sage-Grouse and its habitat in Segment 6.

The analysis of cumulative effects on Greater Sage-Grouse assumes that off-site mitigation required for the Proposed Action in Segment 6 and other future projects authorized by BLM that may affect the Northern Great Basin Greater Sage-Grouse population will be sufficient and effective in maintaining or enhancing habitat for the Northern Great Basin Greater Sage-Grouse population as required under BLM WO IM 2012-43. Consequently, the cumulative effects of the Proposed Action in Segment 6, in addition to past, present, and the Gateway West transmission line, are not expected to result in diminished Greater Sage-Grouse habitat quality or quantity or result in a decrease in the Northern Great Basin Greater Sage-Grouse population.

Special Status Species

As a result of the Proposed Action in Segment 6, mortality of special status species (without population-level effects), habitat fragmentation, and disturbance during critical or sensitive periods could occur; therefore, the Proposed Action in Segment 6 could result in long-term moderate impacts to special status species. Present actions, including operation and maintenance of the Hemingway substation as well as irrigated and dry land farming, continue to eliminate or impact habitat for special status species. There is one RFFA, the Gateway West transmission line, in Segment 6. The Gateway West alternatives would primarily impact special status species utilizing shrubland habitat within the geographic area of influence for the Proposed Action. One of the three Gateway West alternatives would traverse agricultural lands outside the geographic area of influence for the Proposed Action. The present actions and the Gateway West transmission line would result in moderate direct impacts to special status species because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action in Segment 6 when added to the past, present, and RFFAs would result in a moderate cumulative impact to special status species in Segment 6.

Present actions within the geographic area of influence for special status species in Segment 6 include operation and maintenance of the Hemingway substation as well as irrigated and dry land farming. The conversion of habitat for farming has resulted in habitat loss and fragmentation for special status species. The Gateway West alternatives would primarily impact special status species utilizing shrubland habitat within the geographic area of influence for the Proposed Action. One of the three Gateway West alternatives would traverse agricultural lands outside the geographic area of influence for the Proposed Action. Therefore the cumulative impact to special status species in the geographic area of influence for the Proposed Action when added to present actions and the RFFA in Segment 6 would be moderate over the short term and long term.

Migratory Birds Including Raptors

It is well documented that power lines, communication towers, and wind generation facilities cause both direct and indirect moralities to migratory birds and raptors. Project design features associated with the Proposed Action in Segment 6 that were created to reduce impacts to Greater Sage-Grouse, such as perch and nesting site deterrents, would decrease nesting and hunting opportunities for raptors. As a result of the Proposed Action in Segment 6, removal or disturbance to nesting sites for migratory birds and raptors could occur, and indirect effects could cause mortality of migratory birds (with no population-level effect); therefore, the Proposed Action in Segment 6 could result in long-term moderate impacts to migratory birds including raptors. Present actions, including operation and maintenance of the Hemingway substation as well as irrigated and dry land farming, continue to eliminate or impact habitat for migratory birds and raptors. The Gateway West alternatives would primarily impact migratory birds that utilize shrubland habitat. Present and RFFAs would result in moderate direct impacts to the migratory birds including raptors because of the potential mortality of individuals, habitat loss, and disruption of breeding activities. Therefore, the incremental effects of the construction and operation of the Proposed Action in Segment 6 when added to the past, present, and RFFAs would result in a moderate cumulative impact to migratory birds and raptors in Segment 6.

Big Game

Modification of mule deer and pronghorn winter range and bighorn sheep population management units, and disturbance during a critical or sensitive period for these big game species could occur as a result of the Proposed Action in Segment 6; therefore, the Proposed Action in Segment 6 could result in long-term moderate impacts to big game. Present actions, including operation and maintenance of the Hemingway substation as well as irrigated and dry land farming, continue to eliminate or impact habitat for big game. The Gateway West transmission line would cross within pronghorn winter range in game management units. Present actions and the Gateway West transmission line would result in moderate direct impacts to big game because of the potential mortality of individuals, habitat loss, fragmentation, and disruption during a critical or sensitive period. Therefore, the incremental effects of the construction and operation of the Proposed Action in Segment 6 when added to the Gateway West transmission line and present actions would result in a moderate cumulative impact to big game in Segment 6.

Summary of Cumulative Effects

The intensity of cumulative effects to wildlife is the same for the Proposed Action and all alternatives so no distinction is made between alternatives or among Project Segments. The summary of long-term cumulative effects to wildlife is provided in Table 3-316.

Table 3-316. Cumulative Effects on Wildlife

Resource	Type of Impact	Analysis Area	Cumulative Effect
Columbia spotted frog	Mortality, soil erosion, sedimentation, habitat modification, fragmentation	Mapped riparian and wetland polygons within 0.5 mile of the Proposed Action and alternative centerlines and access road centerlines.	Moderate
Greater Sage-Grouse	Mortality, noise disturbance, human presence, disruption of breeding & foraging behaviors, habitat loss & modification, fragmentation, predation	Preliminary Priority Habitat (PPH), Preliminary General Habitat (PGH) and restoration habitat polygons that are crossed by the Proposed Action and alternative centerlines and access roads, plus areas within 11 miles of known Greater Sage-Grouse leks that are located within 5 miles of the Proposed Action and alternative centerlines and access roads.	High
Washington ground squirrel	Mortality, noise disturbance, human presence, habitat loss & modification, predation	Areas of suitable habitat within 0.5 mile of Proposed Action and alternative centerlines and 50 feet from access road centerlines.	High
Special status species	Mortality, noise disturbance, human presence, disruption of breeding & foraging behavior, habitat loss & modification, fragmentation and loss of connectivity	Areas of suitable habitat within 0.5 mile of Proposed Action and alternative centerlines and 50 feet from access road centerlines.	Moderate
Management indicator species	Mortality, noise disturbance, human presence, disruption of breeding & foraging behavior, habitat loss & modification, fragmentation and loss of connectivity	Areas of suitable habitat within 0.5 mile of Proposed Action and alternative centerlines and 50 feet from access road centerlines.	Moderate

Resource	Type of Impact	Analysis Area	Cumulative Effect
Migratory birds including raptors	Mortality, noise disturbance, human presence, disruption of foraging behavior, habitat loss & modification, fragmentation	Areas within 0.5 mile of the Proposed Action and alternative centerlines. Known locations of eagle nests and suitable winter roosting habitat within 10 miles of the Proposed Action and alternative centerlines.	Moderate
Big game (elk, mule deer, bighorn sheep, pronghorn)	Mortality, noise disturbance, human presence, disruption of foraging behavior, habitat loss & modification, fragmentation and loss of connectivity	Mapped extent of herd unit areas of crucial wintering and parturition crossed by the Proposed Action and alternative centerlines and by access roads.	Moderate

3.3.4.5 FISH RESOURCES

METHODOLOGY

The geographic area of influence for the analysis of cumulative impacts to the fish species and their habitat is defined as the sub-basins (4th level HUCs) that would be crossed by the Proposed Action and alternatives. Any present actions and reasonably foreseeable future actions (RFFA) within this geographic area of influence was evaluated. The present actions and RFFAs are listed in Table 3-314 and Table 3-315. These are the actions considered in the fish resource cumulative analysis.

The consideration of past actions is reflected in current environmental conditions as established in the affected environment baseline conditions. For this analysis cumulative fisheries impacts for the geographic area of influence are the combined direct effects of the present and RFFAs plus the direct impacts of the Proposed Action and alternatives. The contribution to fisheries cumulative impacts by the Proposed Action and alternatives are assessed in terms of the temporary displacement of fish species, potential mortality of the fish species under consideration, disturbance to species during critical periods, and loss or modification of habitat. Each of the alternatives is evaluated using the similar criteria as the direct impact methodology with some modification. The specifics of the present actions and RFFAs (such as the building configuration, layout of turbines, design features, alignment of transmission lines, amount of vegetation removal, and location and type of road crossings) of the project components associated with the actions are not known at this time, which results in a more qualitative than quantitative assessment of cumulative impacts. The specific number of road stream crossings and the proximity of ground disturbance of any present or RFFAs are not known.

The levels of direct and cumulative impacts are categorized as high, moderate, or low impact based on the same thresholds as defined in the fisheries section (Section 3.2.5). If the direct impacts to fisheries resources were considered to be none or negligible as a result of the construction and maintenance of the Proposed Action or alternatives, there would be no contribution to cumulative impacts to fisheries resources. In addition, there would be no cumulative impacts if there would be no direct impacts from present and RFFA because there were no identified actions within the geographic area of influence.

The following narrative summarizes the cumulative fish resources impacts by segment and alternative with the exception of the impacts that would encompass multiple segments because of their physical location. There are no RFFAs or present actions to associate with impacts to fish resources in Segments 2 and 3 so the respective sections of the Proposed Action as well as the Flagstaff, Glass Hill, Timber Canyon, and Burnt River Mountain alternatives would not contribute to cumulative impacts.

Segment 1—Morrow-Umatilla

The Proposed Action and alternatives in Segment 1 are within the Middle Columbia-Lake Wallula, Willow, and Umatilla watersheds. Table 3-317 provides the estimated number of streams potentially effected as well as whether or not the Proposed Action, alternatives, or the RFFAs would potentially be present within 1,000 feet of listed or sensitive fish species.

Table 3-317. Reasonably Foreseeable Future Actions, Proposed Action, Horn Butte, Longhorn Alternative, and Longhorn Variation within the Geographic Area of Influence for Cumulative Impact for Fish Resources in Segment 1

Name of Action	Watershed	Estimated Number of Streams Potentially Effected	Listed or Sensitive Fish-Species Potentially Present at or within 1,000 feet
Coal Transfer Station	Middle Columbia-Lake Wallula	0	Yes
Ella Butte Wind Power Project	Willow	1	None
Longhorn Substation	Middle Columbia-Lake Wallula	0	Yes
Naval Weapons System Training Facility Boardman	Middle Columbia-Lake Wallula	1	None
Perennial Wind Chaser Station	Umatilla	1	None
Rackspace Data Center	Middle Columbia-Lake Wallula	0	Yes
Saddle Butte Wind Park	Willow	27	None
U.S. 730 Corridor Refinement Plan (2007);	Middle Columbia-Lake Wallula	1	Yes

Name of Action	Watershed	Estimated Number of Streams Potentially Effected	Listed or Sensitive Fish-Species Potentially Present at or within 1,000 feet
Proposed Action	Middle Columbia-Lake Wallula, Willow, and Umatilla	91	Yes
Horn Butte	Middle Columbia-Lake Wallula and Willow,	91	Yes
Longhorn Alternative	Middle Columbia-Lake Wallula and Umatilla	74	Yes
Longhorn Variation	Middle Columbia-Lake Wallula and Umatilla	74	Yes

Proposed Action

The Proposed Action in Segment 1 would have low to moderate direct effects to Middle Columbia River steelhead and designated critical habitat in addition to low indirect effect to coho salmon essential fish habitat. There could also be moderate direct and indirect effects to sensitive fish species and habitats due to the quantity of streams potentially affected by the Proposed Action. This may result in the mortality of listed species as well as for sensitive and other non-listed fish because of the modification of the habitat during construction. Similarly, there would be moderate direct and indirect effects associated with the RFFAs in Segment 1, with the potential to disturb 31 streams and low to moderate direct effects to Middle Columbia River steelhead and indirect effects to the essential fish habitat for the coho salmon. The RFFAs may also result in the mortality of listed, sensitive and other non-listed fish species because of the modification of the habitat during construction of the various projects. The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources within the Proposed Action’s geographic area of influence.

Horn Butte Alternative

The Horn Butte Alternative would have the same effects to sensitive fish species and habitats as the Proposed Action. Therefore, the incremental effect of the construction and operation of Horn Butte Alternative when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources.

Longhorn Alternative

The Longhorn Alternative would have the similar effects to sensitive fish species and habitats as the Proposed Action. Therefore, the incremental effect of the construction and operation of Longhorn Alternative when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources.

Longhorn Variation

The Longhorn Variation would have the similar effects to sensitive fish species and habitats as the Proposed Action. Therefore, the incremental effect of the construction and operation of Longhorn Variation when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources.

Segment 4—Brogan Area

The Proposed Action and alternatives in Segment 4 are within the Bully, Burnt, Brownlee Reservoir, Willow, and Lower Malheur watersheds. Table 3-318 summarizes the cumulative impacts to fish species and habitats in Segment 4. There is no designated critical habitat or Essential Fish Habitat present in the watersheds within Segment 4.

Table 3-318. Reasonably Foreseeable Future Actions, Proposed Action, Horn Butte, Longhorn Alternative, and Longhorn Variation within the Geographic Area of Influence for Cumulative Impact for Fish Resources in Segment 4

Name of Action	Watershed	Estimated Number of Streams Potentially Effected	Listed or Sensitive Fish-Species Present at or within 1,000 feet
Lime Windfarms	Burnt/Brownlee Reservoir	0	None
Malheur Queen Placer	Willow	2	None
Neal Hot Springs Geothermal	Bully	0	None
Proposed Action	Bully, Burnt, Brownlee Reservoir, Willow, and Lower Malheur	57	Yes
Tub Mountain South	Bully, Burnt, Brownlee Reservoir, Willow, and Lower Malheur	25	Yes
Willow Creek Alternative	Burnt, Brownlee Reservoir, Willow, and Lower Malheur	14	Yes

Proposed Action

The streams in Segment 4 are not known to support anadromous fish species. Redband trout, a sensitive species, are known to occur at one stream crossing in the Durbin Creek watershed. Short-term direct and indirect construction effects to redband trout for the Proposed Action in Segment 4 would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year). There would be a negligible effect associated with the RFFAs in Segment 4, with the potential to disturb two streams and no potential impacts to federally listed or sensitive species. The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources within the geographic area of influence.

Tub Mountain South Alternative

The Tub Mountain South Alternative would have 25 stream crossings. Similar to the Proposed Action, these effected streams not known to support anadromous fish populations. Direct and indirect short-term construction effects of the Tub Mountain South Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species. Short-term direct and indirect construction effects to redband trout for the Tub Mountain South Alternative would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year). There would be negligible effects associated with the RFFAs in Segment 4, with the potential to disturb two streams and no potential impacts to federally listed or sensitive species. The incremental effect of the construction and operation of the Tub Mountain South Alternative when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources within the geographic area of influence.

Willow Creek Alternative

The streams that Willow Creek Alternative would cross are not known to support anadromous fish populations; however, resident fish (redband trout) are known to occur at or near four of the proposed crossings within the Durbin Creek-Burnt River and Benson Creek watersheds. Direct and indirect short-term construction effects of the Willow Creek Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year). There would be a negligible effect associated with the RFFAs in Segment 4, with the potential to disturb two streams and no potential impacts to federally listed or sensitive species. The incremental effect of the construction and operation of the Willow Creek Alternative when added to the past, present, and RFFA would be a low adverse cumulative impact on fish resources within the geographic area of influence.

Segment 5—Malheur

The Proposed Action, alternatives, present actions, and RFFAs in Segment 5 are within the Lower Malheur, Lower Owyhee, Burnt, and Middle Snake-Succor watersheds. Table 3-319 summarizes the cumulative impacts to fish species and habitats in this segment. There is no designated critical habitat or Essential Fish Habitat present in the watersheds within Segment 5.

Table 3-319. Reasonably Foreseeable Future Actions, Proposed Action, Horn Butte, Longhorn Alternative, and Longhorn Variation within the Geographic Area of Influence for Cumulative Impact for Fish Resources in Segment 5

Name of Action	Watershed	Estimated Number of Streams Potentially Effected	Listed or Sensitive Fish-Species Present at or within 1,000 feet
Grassy Mountain Gold	Lower Malheur	3	None
Huntington Windfarms	Burnt	0	None
Proposed Action	Lower Malheur, Lower Owyhee and Middle Snake-Succor	42	Yes
Malheur S	Lower Malheur, Lower Owyhee and Middle Snake-Succor	65	Yes
Malheur A	Lower Malheur, Lower Owyhee and Middle Snake-Succor	64	Yes
Double Mountain	Lower Malheur	12	None

Proposed Action

Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats in Segment 5 would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year).. Short-term direct and indirect construction effects to redband trout for the Proposed Action in Segment 5 would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year). There would be a negligible effect associated with the RFFAs in Segment 5, with the potential to disturb three streams and no potential impacts to federally listed or sensitive species. The incremental effect of the construction and operation of the Proposed when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources within the geographic area of influence.

Malheur S Alternative

The Malheur S Alternative would have the similar effects to sensitive fish species and habitats as the Proposed Action. Therefore, the incremental effect of the construction and operation of Malheur S Alternative when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources.

Malheur A Alternative

The Malheur A Alternative would have the similar effects to sensitive fish species and habitats as the Proposed Action. Therefore, the incremental effect of the construction and operation of Malheur A Alternative when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources.

Double Mountain Alternative

The Double Mountain Alternative would have 12 stream crossings. The streams in the analysis area for this alternative are not known to support any resident or anadromous fish populations. Direct and indirect short-term construction effects of the Double Mountain Alternative to general fish species and habitats would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Indirect long-term effects from operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year). There would be a negligible effect associated with the RFFAs in Segment 5, with the potential to disturb three streams and no potential impacts to federally listed or sensitive species. The incremental effect of the construction and operation of the Proposed when added to the past, present, and RFFA would be a low adverse cumulative impact on fish resources within the geographic area of influence.

Segment 6—Treasure Valley Segment

The Proposed Action, present actions, and RFFAs in Segment 6 are within the Middle Snake-Succor watershed. Table 3-320 summarizes the cumulative impacts to fish species and habitats in this segment. There is no designated critical habitat or Essential Fish Habitat present in the Middle Snake-Succor watershed within Segment 6.

Table 3-320. Reasonably Foreseeable Future Actions, Proposed Action, Horn Butte, Longhorn Alternative, and Longhorn Variation within the Geographic Area of Influence for Cumulative Impact for Fish Resources in Segment 6

Name of Action	Sub-basin (4^{th} level HUC)	Estimated Number of Streams Potentially Effected	Listed or Sensitive Fish-Species Present at or within 1,000 feet
Gateway West Transmission Line	Middle Snake-Succor	31	None
Proposed Action	Middle Snake-Succor	53	Yes

Proposed Action

Of the 53 stream crossings that the Proposed Action would cross, these streams are not known to support anadromous fish species. Redband trout are known to occur at three stream crossings. Short-term direct and indirect construction effects to redband trout for the Proposed Action would be moderate, due to the potential for mortality, but localized and limited in duration to the construction period. Direct and indirect short-term construction effects of the Proposed Action to general fish species and habitats in Segment 6 would be low, because of temporary displacement and the potential for inadvertent mortality of non-sensitive species Long-term indirect effects of project operations would be low in that disturbance would be localized, temporary and infrequent (several maintenance trips per year). There would be a low direct and indirect effect associated with the RFFA in Segment 6, with the potential to disturb 31 streams and no potential impacts to federally listed or sensitive species. The incremental effect of the construction and operation of the Proposed when added to the past, present, and RFFA would be a moderate adverse cumulative impact on fish resources within the geographic area of influence.

3.3.4.6 Land Use, Agriculture, Recreation and Transportation

Methodology

The cumulative impacts analysis area for land use, agriculture, recreation and transportation is the area within 0.5 miles of the Proposed Action and alternative centerlines, and within 50 feet of the access roads and ancillary facilities (Table 3-313). Present actions and reasonably foreseeable future actions (RFFA) within the cumulative impacts analysis area were evaluated for effects similar to those for the Proposed Action and alternatives. The present actions and RFFAs are identified in Table 3-314 and Table 3-315. For this analysis, cumulative impacts for the cumulative impacts analysis area are the combined direct and indirect effects of the present actions and RFFAs plus the direct and indirect impacts of the Proposed Action and alternatives.

The levels of cumulative impacts are described as high, moderate, or low. These cumulative impact levels are based on the thresholds defined in the Land Use, Agriculture, Recreation, and Transportation section (Section 3.2.6). If the direct and indirect impacts to were considered to be none or negligible as a result of the construction and maintenance of the Proposed Action or alternatives, there would be no contribution to cumulative impacts to land use, agriculture, recreation, and transportation. In addition, there would be no cumulative impacts if there would be no direct or indirect impacts from present actions and RFFAs because either there were no identified actions within the cumulative impact analysis area or the actions would result in negligible or no impacts. RFFAs and present actions that occur outside the cumulative impacts analysis area of 0.5 mile of the Proposed Action and alternative centerlines are not addressed in the cumulative analysis.

Land Use and Agriculture

Segment 1 - Morrow - Umatilla

The majority of the land in Segment 1 is privately owned. Nearly 99 percent of county zoning in the analysis area is zoned for agricultural uses with 90 percent of the land area zoned for Exclusive Farm Use.

The RFFAs within the cumulative impact analysis area are the Umatilla Electric Cooperative transmission line, Bonneville Power Administration’s Longhorn Substation, the Morrow Flat Substation and the expansion of operations at the Naval Weapons System Training Facility Boardman. The transmission line and substation are in the cumulative impact analysis area for the Longhorn Alternative and Longhorn Variation but not in the analysis area for the Proposed Action and Horn Butte Alternative. The footprint of the substation would be approximately 33 acres. The footprint of the transmission line would depend on the final design of the alignment. The Naval Weapons System Training Facility Boardman is with the analysis area of the Proposed Action, Horn Butte Alternative, Longhorn Alternative, and Longhorn Variation.

Proposed Action- Land Use

The direct and indirect effects to land uses from the Proposed Action were determined to be low because the effects would not preclude the use of the area for agricultural, grazing and resource development uses. The only RFFA within the cumulative impact analysis area for the Proposed Action is the expansion of operations at the Naval Weapons System Training Facility Boardman. The expansion of operations is not proposed to increase the footprint of the facility. Increased operations would not incrementally contribute to direct impacts to land use. The present actions within the cumulative impact analysis area of the Proposed Action include agricultural use, land development, and energy projects. The incremental effect of the Proposed Action when combined with the existing conditions associated with the present actions would result in a low cumulative impact to land use.

Horn Butte Alternative- Land Use

The direct effects to land uses property from the Horn Butte Alternative were determined to be low in the context of overall area land uses. The only RFFA within the cumulative impact analysis area for the Horn Butte Alternative is the expansion of operations at the Naval Weapons System Training Facility Boardman. Similar to the Proposed Action, there would not be any incremental contribution to cumulative impacts associated with the Naval Weapons System Training Facility Boardman. Therefore, the incremental effect of the Horn Butte Alternative when combined with present actions related to agricultural use, land development, and energy projects would result in a low cumulative impact to land use.

Longhorn Alternative – Land Use

The direct effects to land uses from the Longhorn Alternative were determined to be low in the context of overall area land uses. The RFFAs associated with the Longhorn Alternative analysis area include the Naval Weapons System Training Facility Boardman, the Umatilla Electric Cooperative transmission line, the Morrow Flat Substation and the Bonneville Power Administration’s Longhorn Substation. Similar to the Proposed Action, increased operations at the Naval Weapons System Training Facility Boardman without expansion of the existing footprint would not incrementally contribute to impacts to land use so there would be no cumulative impact associated with the facility. Since agricultural use is the primary land use in the analysis area for the Longhorn Alternative, the transmission line and substation would likely preclude agricultural uses within the associated right-of-way and footprint. The footprint of the substations would be approximately 33 acres and the footprint and alignment of the transmission line is not known. The impact from the transmission line and substation facilities would incrementally contribute to moderate direct impacts to land use within the cumulative impact analysis area. The anticipated disturbance of the transmission line and substations combined with the direct impacts created by the Longhorn Alternative would result in a moderate cumulative impact.

Longhorn Variation - Land Use

The cumulative effects to land use for the analysis area for the Longhorn Variation would be the same as those associated with the Longhorn Alternative.

Proposed Action - Agriculture

The direct effects to agricultural lands from the Proposed Action were determined to have a low impact on agricultural operations. The only RFFA within the cumulative impact analysis area for the Proposed Action is the expansion of operations at the Naval Weapons System Training Facility Boardman. The expansion of operations is not proposed to increase the footprint of the facility and would not incrementally contribute to impacts to agricultural operations. Therefore, there would be no incremental contribution to cumulative impact associated with the facility. The present actions within the cumulative impact analysis area of the Proposed Action include agricultural use, land development, and energy projects. The incremental effect of the Proposed Action when combined with the existing conditions associated with the present actions would result in a low cumulative impact to agricultural use.

Horn Butte Alternative - Agriculture

The direct effects to agricultural operations from the Horn Butte Alternative were determined to be low in the context of the scale of agricultural activity in the analysis area. The only RFFA within the cumulative impact analysis area for the Horn Butte Alternative is the expansion of operations at the Naval Weapons System Training Facility Boardman. Similar to the Proposed Action, there would not be incremental contribution to land use cumulative impacts associated with the Naval Weapons System Training Facility Boardman. Therefore, the incremental effect of the Horn Butte Alternative when combined with existing agricultural use, land development, and energy projects would result in a low cumulative impact to agricultural operations.

Longhorn Alternative - Agriculture

The direct effects to private property from the Longhorn Alternative were determined to be moderate due to the long-term removal of tree crops in the right-of-way. The RFFAs associated with the Longhorn Alternative analysis area include the Naval Weapons System Training Facility Boardman, the Umatilla Electric Cooperative transmission line, the Morrow Flat Substation and the Bonneville Power Administration's Longhorn Substation. Similar to the Proposed Action, increased operations at the Naval Weapons System Training Facility Boardman without expansion of the existing footprint would not incrementally contribute to impacts to agricultural operations and as a result, there would be no incremental contribution to land use cumulative impacts associated with the facility. The moderate direct and indirect impacts from the transmission line and substation facilities would incrementally contribute to conversion of agricultural lands to other uses. These developments would likely preclude agricultural uses, specifically the tree crops within the associated right-of-way and footprint. The footprint of the substations would be approximately 33 acres and the footprint and alignment of the transmission line is not known. Therefore, the anticipated disturbance of the transmission line and substations combined with the incremental contribution of the direct impacts from the Longhorn Alternative would result in a moderate cumulative impact.

Longhorn Variation - Agriculture

The direct effects to agricultural operations from the Longhorn Variation were determined to be low in the context of the scale of agricultural activity in the analysis area. Similar to the Proposed Action, there would not be any incremental contribution to cumulative impacts associated with the Naval Weapons System Training Facility Boardman. The cumulative effects to agricultural operations from the Umatilla Electric Cooperative transmission line, the Morrow Flat Substation and the Longhorn Substation would be consistent with those associated with the Longhorn Alternative. Therefore, the conversion of agricultural lands to other uses would result in a moderate cumulative impact.

Segment 2 - Blue Mountains

The majority of the land in Segment 2 is privately owned. County zoning in the analysis area is nearly 100 percent agricultural with timber harvesting an important land use. About 72 percent of the agricultural lands are irrigated and 22 percent are dry farmed.

In Segment 2, there are no identified RFFAs within the cumulative impact analysis area. As a result, the cumulative effects would be limited to past and present actions and the incremental contribution from the Proposed Action and Glass Hill Alternative. The past and present actions in this area include irrigated and dry land farming, timber management, grazing, land development, transmission lines, roads, and pipelines, wind energy, and various forest management activities. Land development and wind energy activities in Segment 2 are a minor component in general and are not within the cumulative impact analysis area for this segment.

Proposed Action - Land Use

The direct and indirect effects to land uses from the Proposed Action were determined to be low because the effects would not preclude the use of the area for agricultural, grazing and resource development uses. The present actions would contribute negligible to low changes in land uses in the analysis area. As a result, the Proposed Action combined with the incremental effect of present actions in the area would result in low cumulative impacts.

Glass Hill Alternative – Land Use

The direct effect to land uses from the Glass Hill Alternative was determined to be low in the context of overall land uses. Similar to the Proposed Action, the incremental effect of present actions combined with the impacts associated with the Glass Hill Alternative would result in low cumulative impacts.

Proposed Action - Agriculture

The direct and indirect effects to agricultural lands from the Proposed Action were determined to have a low impact on agricultural operations. The present actions would contribute negligible to low changes to agricultural operations. As a result, the impacts associated with the Proposed Action when combined with the incremental effects from present actions would have a low cumulative impact.

Glass Hill Alternative - Agriculture

The direct and indirect effects from the Glass Hill Alternative were determined to be low. Similar to the Proposed Action, the incremental effect of present actions combined with the impacts associated with the Glass Hill Alternative would result in low cumulative impacts.

Segment 3 – Baker Valley

Approximately 72 percent of lands in Segment 3 are private and 24 percent are managed by BLM. County zoning in the analysis area is about 87 percent agricultural and about 13 percent forest and timber or grazing zones.

In Segment 3, there are no identified RFFAs within the cumulative impact analysis area. As a result, the cumulative effects would be limited to past and present actions and the incremental contribution of the Proposed Action. The past and present actions in this area include agricultural use, timber management, grazing, mineral extraction and forest management activities.

Proposed Action - Land Use

The direct effect to land uses from the Proposed Action was determined to be low because the effects would not preclude the use of the area for grazing, timber management, and resource development uses. The present actions would contribute negligible to low changes in land uses in the analysis area. Therefore, the Proposed Action combined with the incremental effect of present actions in the area would result in low cumulative impacts.

Flagstaff and Timber Canyon Alternatives – Land Use

Similar to the Proposed Action, the direct effects from the Flagstaff, Burnt River Mountain, and Timber Canyon alternatives on land use would be low because the effects would not preclude existing uses in the area. The present actions would contribute negligible to low changes in land uses in the analysis area. Therefore, the incremental effect of present actions combined with the impacts associated with these alternatives would result in low cumulative impacts.

Burnt River Mountain Alternative – Land Use

For the Burnt River Mountain Alternative, the mineral quarrying operation that supports the Ash Grove Cement plant near Weatherby, Oregon is within the cumulative effects analysis area. While the effects to land use caused by the Burnt River Mountain Alternative would be low, the cumulative land use effects in the Weatherby area would be high due to the long-term displacement of other land uses.

Proposed Action - Agriculture

The direct effects to agricultural lands from the Proposed Action and incremental impacts from present actions were determined to have a low impact and negligible to low impacts, respectively on agricultural operations. Therefore, the Proposed Action when combined with the incremental effects from present actions would have a low cumulative impact.

Flagstaff, Burnt River Mountain, and Timber Canyon Alternatives – Agriculture

The direct effects from the Flagstaff, Burnt River Mountain, and Timber Canyon alternatives on agricultural operations would be the same as the Proposed Action. Therefore, the incremental effect of the low to negligible impacts from present actions combined with the impacts associated with these alternatives would result in low cumulative impacts.

Segment 4 – Brogan Area

Approximately 50 percent of the lands in Segment 4 are private and 47 percent are managed by BLM. Agricultural land use is approximately 12 percent of the cumulative impact analysis area with 82 percent being irrigated agricultural lands. County zoning is nearly 100 percent agricultural.

In Segment 4, there are no identified RFFAs within the cumulative impact analysis area for the Proposed Action or the Tub Mountain South Alternative. The Huntington Windfarms project, located 4.5 miles northwest of Huntington, Oregon may be within the cumulative effects analysis area for the Willow Creek Alternative, depending on final configuration. The past and present actions in this area include agricultural use, grazing, and land development.

Proposed Action - Land Use

The direct and indirect effects to land uses from the Proposed Action were determined to be low because the effects would not preclude the use of the area for agricultural use, grazing, and land development. The present actions would contribute negligible to low changes in land uses in the analysis area. Therefore, the Proposed Action combined with the incremental effect of present actions in the area would result in low cumulative impacts.

Tub Mountain South Alternative - Land Use

Similar to the Proposed Action, the direct and indirect effects from the Tub Mountain South Alternative on land use would be low because the effects would not preclude existing uses in the area. The present actions would contribute negligible to low changes in land uses in the analysis area. Therefore, the incremental effect of present actions combined with the impacts associated with the Tub Mountain South Alternative would result in low cumulative impacts.

Willow Creek Alternative - Land Use

Similar to the Proposed Action, the direct and indirect effects from the Willow Creek Alternative on land use would be low because the effects would not preclude existing uses in the area. The present actions and the proposed Huntington Windfarms project would contribute negligible to low changes in land uses in the analysis area. Therefore, the incremental effect of present actions combined with the impacts associated with the windfarm and the Willow Creek Alternative would result in low cumulative impacts.

Proposed Action - Agriculture

The direct and indirect effects to agricultural lands from the Proposed Action and incremental impacts from present actions were determined to have a low impact and negligible to low impacts, respectively, on agricultural operations. Therefore, the Proposed Action when combined with the incremental effects from present actions would have a low cumulative impact.

Willow Creek and Tub Mountain South Alternatives - Agriculture

The direct and indirect effects from the Willow Creek and Tub Mountain South alternatives on agricultural operations would be the same as the Proposed Action. Therefore, the incremental effect of the low to negligible impacts from present actions combined with the impacts associated with the Willow Creek and Tub Mountain South alternatives would result in low cumulative impacts.

Segment 5 - Malheur

Approximately 33 percent of the lands in Segment 5 are private and 65 percent are managed by BLM. Of the cultivated agricultural lands, approximately 23 percent are irrigated and 62 percent are dry farmed.

In Segment 5, there are no identified RFFAs within the cumulative impact analysis area. As a result, the cumulative effects would be limited to past and present actions and the incremental contribution of the Proposed Action.

Proposed Action - Land Use

The direct and indirect effects to land uses from the Proposed Action were determined to be low because the effects would not preclude the use of the area for agriculture, grazing, and resource development uses. The present actions would contribute negligible to low changes in land uses in the analysis area. Therefore, the Proposed Action combined with the incremental effect of present actions in the area would result in low cumulative impacts.

Malheur S, Malheur A, and the Double Mountain Alternatives – Land Use

Similar to the Proposed Action, the direct and indirect effects from the Malheur S, Malheur A, and Double Mountain alternatives on land use would be low because the effects would not preclude existing uses in the area. The present actions would contribute negligible to low changes in land uses in the analysis area. Therefore, the incremental effect of present actions combined with the impacts associated with the Malheur S, Malheur A, and Double Mountain alternatives would result in low cumulative impacts.

Proposed Action - Agriculture

The direct and indirect effects to agricultural lands from the Proposed Action and incremental impacts from present actions were determined to have a low impact and negligible to low impacts, respectively, on agricultural operations. Therefore, the Proposed Action when combined with the incremental effects from present actions would have a low cumulative impact.

Malheur S, Malheur A, and the Double Mountain Alternatives – Agriculture

The direct and indirect effects from the Malheur S, Malheur A, and Double Mountain alternatives on agricultural operations would be the same as the Proposed Action. Therefore, the incremental effect of the low to negligible impacts from present actions combined with the impacts associated with the Malheur S, Malheur A, and Double Mountain alternatives would result in low cumulative impacts.

Segment 6 – Treasure Valley

Approximately 8 percent of lands in Segment 6 are private and 77 percent are managed by BLM. Of the cultivated agricultural lands, approximately 87 percent are irrigated.

A present action within the cumulative effects analysis area is the Hemingway Substation. The RFFA within the cumulative impact analysis area is the Gateway West transmission line. The Gateway West transmission line is proposed to originate from the Hemingway Substation, the terminus of the B2H Project. The transmission line would contribute to surface disturbance within the cumulative impact analysis area. During construction, surface disturbance would be similar to the effects described for the B2H Project. Following construction, surface disturbance would be reduced to the transmission line right-of-way.

Proposed Action - Land Use

The direct and indirect effects to land use from the Proposed Action were determined to be low because the effects would not preclude the use of the area for agriculture, grazing, and resource development uses. The Hemingway Substation and Gateway West transmission line have contributed, and would incrementally contribute to conversion of agricultural lands to other uses and would limit or preclude land uses within the rights-of-way for these projects, resulting in a moderate direct impact to land use. Therefore, the anticipated disturbance of the substation and transmission line combined with the Proposed Action would result in a moderate cumulative impact to land use.

Proposed Action - Agriculture

The direct and indirect effects to agricultural lands from the Proposed Action and incremental impacts from present actions were determined to have a low impact and negligible to low impacts, respectively on agricultural operations. The Hemingway Substation and Gateway West transmission line would incrementally contribute to conversion of agricultural lands to other uses and would limit or preclude agricultural operations within the right-of-way. The moderate direct impact from the substation and transmission line would incrementally contribute to conversion of agricultural lands to other uses. The impact of the substation and transmission line on agricultural operations combined with the Proposed Action would result in moderate cumulative impacts.

Recreation

Methodology

The recreation cumulative effects analysis areas for lands managed by the BLM are Resource Management Plan areas crossed by the Proposed Action and alternative centerlines and access roads.

For lands managed by the USFS, the recreation cumulative effects analysis areas are National Forest land crossed by the Proposed Action and alternative centerlines and access roads. The cumulative effects analysis area for state lands includes all state-owned parcels crossed by the Proposed Action and alternative centerlines and access roads. For private lands, the cumulative effects analysis area includes all counties crossed by the Proposed Action and alternative centerlines and access roads.

The cumulative effects to recreation are described for the Proposed Action and alternatives over the entire B2H project area and are not described by segment.

Cumulative Effects Common to All Alternatives

The Proposed Action and alternatives would create both short- and long-term direct and indirect impacts to recreation resources. The short-term impacts would include localized and temporary disruptions to activities such as hunting, intermittent access delays, and/or increase noise levels during construction. Long-term impacts would primarily occur where the new right-of-way for project components would encroach upon recreation areas. Indirect impacts would stem from unauthorized OHV use during and after construction is complete that could result in trampling of vegetation, displacement of and wildlife, and soil compaction. With the exception of the Timber Canyon Alternative, direct and indirect impacts from the Proposed Action and all of the alternatives would range from low to moderate short-term impacts and low long-term impacts to recreation resources. Due the higher recreation use areas in the Wallowa-Whitman National Forest crossed by the Timber Canyon Alternative, the effects to recreation caused by construction and operation of this alternative would range from low to moderate short- and long-term cumulative impacts to recreation resources.

The present actions and RFFAs located in the cumulative impact analysis area for recreation resource are listed in Table 3-314 and Table 3-315. The levels of direct and cumulative impacts are categorized as high, moderate, or low impact based on the same thresholds as defined in recreation resources (Section 3.2.6.11). The greater concentration of the RFFAs would be located in Morrow and Umatilla counties with the remainder in Baker and Malheur counties in Oregon and Owyhee County, Idaho. These future proposed actions would create localized, short-term, negligible direct and indirect impacts during construction and operation, because there would be temporary displacement and disruption of recreation activities in areas with limited recreation and public interest areas near these RFFAs. There are no RFFAs within the Wallowa –Whitman Forest. Therefore, the incremental effect of the construction and operation of the Proposed Action and alternatives, with the exception of the Timber Canyon Alternative, when added to the past, present, and RFFAs would result in a negligible to low recreation resources cumulative impact. The incremental effect of the construction and operation of the Timber Canyon Alternative when added to the past, present, and RFFAs would result in low to moderate cumulative impacts to recreation resources.

TRANSPORTATION

METHODOLOGY

The cumulative effects analysis area for roads includes the service areas of all roads to be used for B2H Project construction and operations. The cumulative effects analysis area for air transportation includes effects to all airports within 3 miles of the Proposed Action and alternative centerlines and access roads.

The cumulative effects to transportation are described for the Proposed Action and alternatives over the entire B2H project area and are not described by segment.

CUMULATIVE EFFECTS COMMON TO ALL ALTERNATIVES

The past and present actions and RFFAs in the cumulative impact analysis area would contribute incrementally to cumulative impacts to transportation resources. While the transportation requirements for the present actions and RFFAs are unknown, the projects would likely increase traffic on transportation infrastructure including public, private, BLM, USFS, and county or other agency roads. The effects of RFFAs that are located in the same areas served by the transportation infrastructure to be used by the Proposed Action and alternatives would also incrementally contribute to cumulative impacts to transportation facilities in the analysis area. The level of impact would depend on the timing of the construction of the RFFA projects. However it would be unlikely that the Proposed Action and all of the RFFAs would be built at the same time. The direct and indirect effects of the Proposed Action and alternatives would be low and would. The incremental effect of the construction and operation of this project when added to the past, present and RFFAs would result in low cumulative impacts to transportation resources.

3.3.4.7 VISUAL RESOURCES

The discussion of cumulative effects to visual resources is a much more detailed discussion than for other resources primarily because of the very large cumulative effects analysis area (ten miles from the project centerline) and the size of project structures compared to the surrounding built environment (see also Appendix H for supporting data).

METHODOLOGY

The geographic area of influence for the analysis of cumulative impacts to visual resources is defined as the viewshed within a 10-mile distance of the Proposed Action and alternatives. Any present actions and reasonably foreseeable future actions (RFFA) within this geographic area of influence was evaluated. The present actions and RFFAs are listed in Table 3-315 and are described above. These are the actions considered in the visual resource cumulative analysis. Although views can and do extend beyond 10 miles, the 10-mile distance was chosen because it is near the limit of visibility of skylined transmission towers that may be noticeable to casual observers and beyond that the Proposed Action and alternatives would have negligible if any contribution to cumulative visual resources impacts (Sullivan, et.al, 2014).

The individual effects of all past actions to determine the present effects of past action would not be useful to predict the cumulative visual effects of the Proposed Action or alternatives. The consideration of past actions is reflected in current visual environmental conditions as established in the affected environment baseline conditions. For this analysis cumulative visual resources impacts for the geographic area of influence are the combined direct effects of the present and RFFAs plus the direct impacts of the Proposed Action and alternatives. The contribution to visual resources cumulative impacts by the Proposed Action and alternatives are assessed in terms of the magnitude of change in scenic quality and landscape character in addition to the effect of the scale/spatial relationship of the actions from sensitive viewing platforms and special management areas.

The results reported in Appendix B.7 are used to evaluate the contribution of the Proposed Action and alternatives to the incremental effects. Each of the alternatives is evaluated using the same criteria as the direct impact methodology with some modifications. The modifications include looking at the potential from a more qualitative approach and not separating the foreground from the middleground impacts. The visibility conditions, quantification of view, and angle of observations from the sensitive viewing platforms and Special Management Areas of the RFFA are not evaluated because the specifics (such as the height, building configuration, layout of turbines, design features, alignment of transmission lines, and transmission tower types) of the project components associated with the actions are not known at this time.

Unless otherwise noted the middleground level of direct impact created by the Proposed Action and alternatives was used to determine the level of cumulative impacts when considered with the present actions and RFFAs. The levels of direct and cumulative impacts are categorized as high, moderate, or low impact based on the same thresholds as defined in the visual resources (Section 3.2.7). If the direct impacts to scenic quality, landscape character, and sensitive viewers were considered to be none or negligible as a result of the construction and maintenance of the Proposed Action or alternatives, there would be no contribution to visual resources cumulative impacts. In addition, there would be no cumulative impacts if there would be no direct impacts would result from the construction and operation of present and RFFAs because either there were no identified actions within the geographic area of influence or the actions would result in negligible or no impacts. The level of contribution to cumulative impacts by the Proposed Action and alternatives are defined as minor (measured by a low direct impact created by the Proposed Action or alternative) or major (moderate or high direct impacts created by the Proposed Action or alternative).

The following narrative summarizes the cumulative visual resources impacts by segment and alternative with the exception of the impacts to views from linear viewing platforms for the Proposed Action. Views from any linear platforms that would to seen from the various portions of the Proposed Action used for comparison purposes are provided by segment. Unless otherwise noted, only those contributions of the Proposed Action and alternatives to the cumulative impact that would be considered high are noted in the summary. There would be no cumulative visual resources impacts associated with the Glass Hill or Timber Canyon alternatives because there are no notable present or RFFA with the alternative’s geographical area of influence. Therefore, these two alternatives are not included in the analysis of cumulative impacts

PROPOSED ACTION - LINEAR VIEWING PLATFORM

Of the 22 linear platforms that would have views of the Proposed Action, only the Blue Mountain Scenic Byway, Grand Tour Route, Oregon National Historic Trail (NHT), Snake River Canyon Scenic Byway, Snake River-Mormon Basin Back Country Byway, Oregon State Highway 74,and the Western Heritage Historic Byway would also have views of RFFAs. The RFFAs would introduce features in the landscape that would be visually prominent in the landscape and would create moderate direct impacts to views from the Blue Mountain Scenic Byway, Oregon NHT, and Oregon State Highway 74. The Proposed Action when added to the past, present, and RFFAs would have a moderate cumulative impact from these three linear platforms within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be minor in terms of scale because of the low direct impacts to the views from the Blue Mountain Scenic Byway, Oregon NHT, and Oregon State Highway 74 platforms.

The RFFAs would introduce features in the landscape that would be visually prominent in the landscape and would create low direct impacts to views from the Grand Tour Route, Snake River Canyon Scenic Byway, Snake River-Mormon Basin Back Country Byway, and Western Heritage Historic Byway. The Proposed Action when added to the past, present, and RFFAs would have a low cumulative impact from Grand Tour Route, Snake River Canyon Scenic Byway, and Western Heritage Historic Byway platforms within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be minor in terms of scale because of the low direct impacts to the views from the Blue Mountain Scenic Byway, Oregon NHT, and Oregon State Highway 74 platforms. The Proposed Action when added to the past, present, and RFFAs would have a moderate cumulative impact from Snake River-Mormon Basin Back Country Byway because of the moderate direct impacts that would be created by the Proposed Action.

SEGMENT 1-MORROW-UMATILLA

The majority of the Segment 1 is currently developed with predominately agricultural land uses. The most notable existing cultural modifications (built features in the landscape) are two wind energy facilities with a total of approximately 40 turbines and the coal-fired electricity generating Portland General Electric Boardman Plant with its 656-foot stack and associated transmission lines. The visibility of the future wind energy facilities, such as the Saddle Butte Wind Park, would depend on the configuration and layout of the wind turbines. Other RFFAs within this portion of the area of influence would include the Umatilla Electric Cooperative Transmission Line, the Bonneville Power Administration's Longhorn Substation, and the Coyote Island Terminal Coal Transfer Station.

PROPOSED ACTION SCENIC QUALITY

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would be a high cumulative impact on scenic quality in the Willow Creek (BA-002) Visual Analysis Unit (VAU), a moderate cumulative impact in the Longhorn (BA-003), Butter Creek (BA-004), Mattock (BA-005), and Willow Creek (CE-002) VAUs, and a low cumulative impact in the Longhorn (CE-003) within the Proposed Action's geographic area of influence. The Proposed Action would have a major contribution to cumulative visual resource impacts in the Willow Creek (BA-002) VAU because of the moderate direct impacts to the magnitude of change in scenic quality within the Proposed Action's geographic area of influence.

Proposed Action - Landscape Character

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would create a high cumulative magnitude of change in the landscape character in the Willow Creek (BA-002), Longhorn (BA-003), and Butter Creek (BA-004) VAUs and a low cumulative magnitude of change in the landscape character in the Longhorn (CE-003) and Willow Creek (CE-002) VAUs within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be major in the Willow Creek (BA-002), Longhorn (BA-003), and Butter Creek (BA-004) VAUs because of the high direct magnitude of change in landscape character within the Proposed Action's geographic area of influence.

Proposed Action - Stationary Viewing Platforms

The majority of the cumulative impacts to views from stationary platforms would occur where the future wind farms would be constructed and operated, specifically in Segment 1.The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFAs would have a low cumulative impact in terms of scale on the views from Northern Terminus— Boardman Generating Plant (2-10), Boardman Research Natural Area— Bombing Range Road (2-17), and Boardman Conservation Area— Tower Road South (2-18) stationary viewing platforms, a moderate cumulative impact on views from the Boardman Conservation Area— Immigrant Lane (2-15), and a high cumulative impact on views from Oregon Trail Fourmile Canyon Interpretive Site (1-5) within the Proposed Action's geographic area of influence.

The contribution of the Proposed Action to the cumulative impact on views from the Boardman Conservation Area— Immigrant Lane (2-15), Butter Creek Junction (2-20), and Well Spring Oregon Trail Site (2-22) stationary platforms would be major within the Proposed Action's geographic area of influence.

Proposed Action - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for this portion of the Proposed Action.

Horn Butte Alternative - Scenic Quality

The incremental effect of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFA would be low cumulative impact on the overall scenic quality in the Longhorn (CE-003) VAU, moderate within the Coombs (BA-006) and Willow Creek (CE-002) VAUs, and high on the overall scenic quality within the Willow Creek (BA-002), Longhorn (BA-003), and Butter Creek (BA-004) VAUs within the geographic area of influence. Within the Willow Creek (BA-002) and the Longhorn (BA-003) VAUs, the Horn Butte Alternative would have a moderate direct impact on scenic quality and therefore, the contribution of the Horn Butte Alternative to the cumulative visual resource impact would be major.

Horn Butte Alternative - Landscape Character

The incremental effect of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFA would be a low cumulative magnitude of change to the landscape character within the Willow Creek (CE-002) and Longhorn (CE-003) VAUs, moderate within the Willow Creek (BA-002) VAU, and a high cumulative magnitude of change to the landscape character within the Coombs (BA-006), Longhorn (BA-003), and Butter Creek (BA-004) VAUs within the geographic area of influence. The contribution of the Horn Butte Alternative to the cumulative magnitude of change to landscape character would be major in the Willow Creek (BA-002) and Longhorn (BA-003) VAUs because the direct magnitude of change in landscape character would be moderate and high, respectively.

Horn Butte Alternative - Stationary Viewing Platform

The incremental effect of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFA would result in a high cumulative impact in terms of scale on the views from Oregon Trail Fourmile Canyon Interpretive Site (1-5), Lindsay Prairie Preserve (2-16), Butter Creek Junction (2-20), and the Well Spring Oregon Trail Site (2-22) stationary platforms. There would be a moderate cumulative impact on views from the Boardman Conservation Area— Immigrant Lane (2-15) stationary platform and low cumulative impact on views from the Northern Terminus— Boardman Generating Plant (2-10) and Boardman Research Natural Area— Bombing Range Road (2-17) stationary platforms. For the viewers at the Lindsay Prairie Preserve (2-16) stationary platform, the contribution of the Horn Butte Alternative to the cumulative impact would be minor. From the Boardman Conservation Area— Immigrant Lane (2-15) and Well Spring Oregon Trail Site (2-22) stationary platforms the contribution would be major.

Horn Butte Alternative - Linear Viewing Platform

The incremental effect of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFA would result in a moderate cumulative impact in terms of scale when viewed along the Blue Mountain Scenic Byway/State Highway 74. The contribution of the Horn Butte Alternative to the cumulative impact in terms of scale would be minor from the perspective of Blue Mountain Scenic Byway/State Highway 74 linear platform, because the direct impact that would be created by the scale of this alternative would be low when viewed from this platform.

The incremental effect of the construction and operation of the Horn Butte Alternative when added to the past, present, and RFFA would result in a high cumulative impact in terms of scale when viewed along the Oregon NHT. The contribution of the Horn Butte Alternative to the cumulative impact in terms of scale would be major because there would be moderate direct impact to views from the Oregon NHT.

Horn Butte Alternative - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for the Horn Butte Alternative.

Longhorn Alternative - Scenic Quality

The incremental effect of the construction and operation of the Longhorn Alternative when added to the past, present, and RFFAs would result in a moderate cumulative impact on scenic quality within the Longhorn (BA-003), Butter Creek (BA-004), and Coombs (BA-006) VAUs. There would be minor contribution of the Longhorn Alternative to the cumulative impact on scenic quality within the geographic area of influence.

Longhorn Alternative - Landscape Character

The incremental effect of the construction and operation of the Longhorn Alternative when added to the past, present, and RFFA would be a high cumulative magnitude of change to the landscape character within Longhorn (BA-003) VAU and a moderate cumulative magnitude of change within Butter Creek (BA-004) and Coombs (BA-006) VAUs.. The contribution of the Longhorn Alternative to the cumulative magnitude of change to landscape character would be major in the Longhorn (BA-003) VAU because of the direct impact to the magnitude of change in landscape character would be high.

Longhorn Alternative - Stationary Viewing Platform

The incremental effect of the construction and operation of the Longhorn Alternative when added to the past, present, and RFFA would create a low cumulative impact in terms of scale when viewed from the Butter Creek Junction (2-20) and Wilson Lane Southeast (2-23) stationary platforms. The contribution of the Longhorn Alternative to the cumulative impact in terms of scale would be none for the Butter Junction (2-20) and minor at the Wilson Lane Southeast (2-23) stationary platform.

Longhorn Alternative - Linear Viewing Platform

The incremental effect of the construction and operation of the Longhorn Alternative when added to the past, present, and RFFAs would result in a low cumulative impact in terms of scale when viewed along I-84. There would be a minor contribution to the cumulative impact in terms of scale from I-84 because of the low direct impact from the Longhorn Alternative. The visual resources cumulative impacts on sensitive viewers from Oregon NHT would be the same as the Horn Butte Alternative.

Longhorn Alternative - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for the Longhorn Alternative.

Longhorn Variation - Scenic Quality

The same five VAUs are associated with the Longhorn Variation as the Longhorn Alternative. The cumulative impacts on scenic quality would be the same as the Longhorn Alternative. The contribution to cumulative impacts by the Longhorn Variation would also be the same for four out of the five VAUs. The exception would be within the Butter Creek (BA-004) VAU, there would be no contribution by the Longhorn Variation because of the negligible direct impacts.

Longhorn Variation - Landscape Character

The same five VAUs are associated with the Longhorn Variation as the Longhorn Alternative. The cumulative magnitude of change to the landscape character would be the same as the Longhorn Alternative.

Longhorn Variation - Stationary Viewing Platforms

The incremental effect of the construction and operation of the Longhorn Variation when added to the past, present, and RFFAs would result in a moderate cumulative impact in terms of scale to the views from the Boardman Research Natural Area-Bombing Range Road (2-17). The contribution of the Longhorn Variation to the cumulative impacts in terms of visual contrast would be major for the Boardman Research Natural Area-Bombing Range Road (2-17) and Wilson Lane Southeast (2-23) stationary platforms because there would be moderate direct impacts.

Longhorn Variation - Linear Viewing Platform

The visual resources cumulative impacts on sensitive viewers from I-84, Oregon NHT, and the Lewis and Clark Trail Scenic Byway/National Historic Trail in Washington would be the similar to the Longhorn Alternative.

Longhorn Variation - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for the Longhorn Variation.

Section of Proposed Action Equivalent to the Horn Butte Alternative, Longhorn Alternative, and Longhorn Variation - Scenic Quality

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFAs would be a low cumulative impact on the overall scenic quality within the Longhorn (CE-003) VAU, moderate within the Longhorn (BA-003), Butter Creek (BA-004), and Willow Creek (CE-002) VAUs, and high within the Willow Creek (BA-002),. For the Willow Creek (BA-002) and the Longhorn (BA-003), the Horn Butte Alternative would have a moderate direct impact on scenic quality and therefore, the contribution of the Horn Butte Alternative to the cumulative visual resource impact would be major.

Section of Proposed Action Equivalent to the Horn Butte Alternative, Longhorn Alternative, and Longhorn Variation - Landscape Character

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFAs would be a low cumulative magnitude of change to the landscape character within Willow Creek (CE-002) and Longhorn (CE-003) VAUs, a moderate cumulative magnitude of change in landscape character within the Butter Creek (BA-004) VAU, and a high cumulative magnitude of change in landscape character within Longhorn (BA-003), and Willow Creek (BA-002) VAUs. The contribution of this portion of the Proposed Action to the cumulative magnitude of change in the landscape character would be major in the Willow Creek (BA-002) and Longhorn (BA-003) VAUs because the direct magnitude of change in landscape character would be high and moderate, respectively.

Section of Proposed Action Equivalent to the Horn Butte Alternative, Longhorn Alternative, and Longhorn Variation - Stationary Viewing Platforms

The visual resources cumulative impacts on views from the eight stationary platforms would be the same as the Horn Butte Alternative as well as the contribution to cumulative impacts by this portion of the Proposed Action.

Section of Proposed Action Equivalent to the Horn Butte Alternative, Longhorn Alternative, and Longhorn Variation - Linear Viewing Platforms

The visual resources cumulative impacts on views from the three linear platforms would be the same as the Horn Butte Alternative as well as the contribution to cumulative impacts by this portion of the Proposed Action.

Section of Proposed Action Equivalent to the Horn Butte Alternative, Longhorn Alternative, and Longhorn Variation - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for this section of the Proposed Action.

Segment 2—Blue Mountains

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect visual resources. Therefore, there would be no cumulative impacts and no incremental effect contribution from the Glass Hill Alternative or the Proposed Action within Segment 2.

Segment 3—Baker Valley

Land use in this segment is dominated by agriculture, rangeland, and forested areas. Baker and Durkee valleys are located north and south from Baker City, respectively, are both intensively farmed areas in the county. The most notable existing cultural modifications are the communities of Baker City, Durkee, Haines, Huntington, Keating, Lime, New Bridge, and Richland and the associated agricultural land use. The construction of the approximately 14 wind turbines associated with the future Huntington and Lime wind energy facilities would physically occur within the Segment 4-Brogan Area. However, the visibility of the future wind energy facilities would extend beyond the segment boundaries and depending on the configuration and layout of the wind turbines would potentially be visible within Segment 3.

The Blue and Wallowa Foothills (BA-014) VAU encompasses areas within both Segments 3 and 4. Potential impacts that would be created by the Proposed Action are described in Segment 3 and are not repeated in Segment 4. Similarly, the Juniper and Sugarloaf Mountains (BA-025) and Caribou Bar (BA-027) VAUs include areas also within both Segment 3 and Segment 4. Any potential impacts to the Juniper and Sugarloaf Mountains (BA-025) and Caribou Bar (BA-027) VAUs that would be created by the Proposed Action are addressed in Segment 3 and not repeated in Segment 4.

Proposed Action - Scenic Quality

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low and moderate cumulative impact on the overall scenic quality in the Blue and Wallowa Foothills (BA-014) VAU, respectively, within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be a major contribution in Blue and Wallowa Foothills (BA-014) VAU because of the moderate direct impacts within the Proposed Action's geographic area of influence.

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low cumulative impact on the overall scenic quality in the Juniper and Sugarloaf Mountains (BA-025) and Caribou Bar (BA-027) VAUs within the Proposed Action's geographic area of influence in Segment 3. The contribution of the Proposed Action to the cumulative visual resource impact would be minor because the low direct impacts to the magnitude of change in scenic quality within the Proposed Action's geographic area of influence.

Proposed Action Landscape Character

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a high cumulative magnitude of change to landscape character within the Blue and Wallowa Foothills (BA-014) VAU within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative magnitude of change in the landscape character would be major because the high direct magnitude of change in the landscape character within the Blue and Wallowa Foothills (BA-014) VAU within the Proposed Action's geographic area of influence.

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a high cumulative magnitude of change in the landscape character in the Juniper and Sugarloaf Mountains (BA-025) VAU within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative magnitude of change to the landscape character would be high because there would be high direct magnitude of change in landscape character within the Juniper and Sugarloaf Mountains (BA-025) VAU within the Proposed Action's geographic area of influence.

PROPOSED ACTION - STATIONARY VIEWING PLATFORMS

There would be no stationary or linear viewing platforms affected by RFFAs in Segment 3 within the geographic area of influence for this portion of the Proposed Action.

PROPOSED ACTION- SPECIAL MANAGEMENT AREAS

There are not RFFA projects that would have views of the Powder River ACEC. Therefore, there would be no visual resources cumulative impacts to casual viewers from this ACEC within the geographic area of influence of the Proposed Action.

BURNT RIVER ALTERNATIVE- SCENIC QUALITY

The incremental effect of the construction and operation of the Burnt River Alternative when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality within this alternative's geographic area of influence. There would be no contribution of the Burnt River Alternative to the cumulative visual resource impact because there would be negligible direct impacts to scenic quality.

BURNT RIVER ALTERNATIVE- LANDSCAPE CHARACTER

The incremental effect of the construction and operation of the Burnt River Alternative when added to the past, present, and RFFA would be a moderate cumulative magnitude of change to the landscape character within the Blue and Wallowa Foothills (BA-014) VAU and a high cumulative magnitude of change within the Juniper and Sugarloaf Mountains (BA-025) VAU within this alternative's geographic area of influence. The contribution of the Burnt River Alternative to the cumulative magnitude of change in the landscape character would be major within the Blue and Wallowa Foothills (BA-014) and Juniper and Sugarloaf Mountains (BA-025) VAUs because the direct magnitude of change in landscape character would be moderate and high, respectively.

BURNT RIVER ALTERNATIVE- STATIONARY AND LINEAR VIEWING PLATFORMS

There would be no direct impacts from the present and RFFA projects to views from the four stationary platforms within Segment 3. Therefore, there would be no visual resources cumulative impacts to views from these platforms within the geographic area of influence of the Burnt River Alternative.

There would be no or negligible direct impacts from the present and RFFA projects to views from the five linear viewing platforms within Segment 3. Therefore, there would be no visual resources cumulative impacts to views from these platforms within the geographic area of influence of the Burnt River Alternative.

BURNT RIVER ALTERNATIVE- SPECIAL MANAGEMENT AREAS

There would be negligible direct impacts from the present and RFFA projects to views from the Oregon Trail ACEC. Therefore, there would be no visual resources cumulative impacts to casual viewers from this ACEC within the geographic area of influence of the Burnt River Alternative.

Section of Proposed Action Equivalent to the Burnt River Alternative – Scenic Quality

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would be a low cumulative impact on the overall scenic quality within the Juniper and Sugarloaf Mountains (BA-025) and Caribou Bar (BA-027) VAUs and a moderate cumulative impact within the Blue and Wallowa Foothills (BA-014) VAU. This section of the Proposed Action contribution to the cumulative visual resource impact would be major within the Blue and Wallowa Foothills (BA-014) VAU because there would be moderate direct impacts to scenic quality within this VAU and a minor contribution to cumulative impacts within the Juniper and Sugarloaf Mountains (BA-025), and Caribou Bar (BA-027) VAUs.

Section of Proposed Action Equivalent to the Burnt River Alternative – Landscape Character

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would be a high cumulative magnitude of change to the landscape character within the Blue and Wallowa Foothills (BA-014) and Juniper and Sugarloaf Mountains (BA-025) VAUs. The contribution of this segment of the Proposed Action to the cumulative magnitude of change to landscape character would be major in the Blue and Wallowa Foothills (BA-014) and Juniper and Sugarloaf Mountains (BA-025) VAUs because of the high direct magnitude of change in the landscape character.

Section of Proposed Action Equivalent to the Burnt River Alternative – Stationary and Linear Viewing Platforms

There would be no direct impacts from the present and RFFA projects on views from the four stationary platforms within this section of the Proposed Action. Therefore, there would be no visual resource cumulative impacts on the views from these platforms within the geographic area of influence of this section of the Proposed Action.

There would be no or negligible direct impacts from the present and RFFA projects on views from the five linear platforms. Therefore, there would be no visual resources cumulative impacts on views from these platforms within the geographic area of influence of this section of the Proposed Action.

Section of Proposed Action Equivalent to the Burnt River Alternative – Special Management Areas

There would be negligible direct impacts from the present and RFFA projects on views from the Oregon Trail ACEC. Therefore, there would be no visual resources cumulative impacts to casual viewers from this ACEC within the geographic area of influence this section of the Proposed Action.

Segment 4-Brogan Area

The land use within the Brogan Segment is currently primarily undeveloped land and agricultural land uses along the major creeks/rivers. The most notable existing cultural modifications are the rural communities of Vale, Jamieson, and Brogan, the existing Malheur Queen Placer Mine in north-central Malheur County, and the Neal Hot Springs Geothermal facility northwest of Vale. With the construction of the future Huntington and Lime Windfarms, there would be approximately 14 wind turbines added to the landscape. The visibility of the future wind energy facilities would depend on the configuration and layout of the wind turbines.

The Juniper and Sugarloaf Mountains (BA-025) VAU includes both Segment 3-Baker Valley and Segment 4. Any potential impacts to the Juniper and Sugarloaf Mountains (BA-025) VAU that would be created by the Proposed Action are addressed in Segment 3 and not repeated in Segment 4.

Proposed Action - Scenic Quality

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low cumulative impact on the overall scenic quality in the Cow Valley Butte (MA-007), Becker Creek (MA-009), and Gum Creek (MA-012) VAUs within the Proposed Action’s geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be none/minor.

Proposed Action - Landscape Character

There would be no direct impacts from the present and RFFA projects on landscape character within the VAUs encompassing the Proposed Action’s geographic area of influence in this segment. Therefore, there would be no cumulative magnitude of change to landscape character within these VAUs.

Proposed Action - Stationary Viewing Platforms

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low cumulative impact in terms of scale on the views from the Lands with Wilderness Characteristic Inventory Unit #OR-035-016 (5-59) stationary platform and a moderate impact on views from the Steck Park BLM Recreation Site (7-6) stationary platform within the Proposed Action’s geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact in terms of scale would be none.

Proposed Action – Special Management Areas

There would be negligible direct impacts from the present and RFFA projects to views from the Oregon Trail- Birch Creek and Tub Mountain ACECs. Therefore, there would be no visual resources cumulative impacts to casual viewers from these two ACECs within the geographic area of influence from the Proposed Action.

Willow Creek Alternative – Scenic Quality

The incremental effect of the construction and operation of the Willow Creek Alternative when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality in the Blue and Wallowa Foothills (BA-014), Juniper and Sugarloaf Mountains (BA-05/FR-025), Caribou Bar

(BA-027), Becker Creek (MA-009), Gum Creek (MA-012), Hope Butte (MA-038), Treasure Valley (MA-039), Moore Hollow (MA-040), and Danger Point (MA-119) VAUs. The Willow Creek Alternative's contribution to the cumulative visual resource impact would be minor for the Blue and Wallowa Foothills (BA-014), Juniper and Sugarloaf Mountains (BA-025), Caribou Bar (BA-027), Gum Creek (MA-012), Hope Butte (MA-038), Treasure Valley (MA-039), and Moore Hollow (MA-040), VAUs because there would be low direct impacts to scenic quality within these VAUs. This alternative's contribution to cumulative impacts would be none for Juniper and Sugarloaf Mountains (FR-025), Becker Creek (MA-009), and Danger Point (MA-119) VAUs because there would be negligible direct impacts from the Willow Creek Alternative to these VAUs.

Willow Creek Alternative – Landscape Character

The incremental effect of the construction and operation of the Willow Creek Alternative when added to the past, present, and RFFA would be a high cumulative magnitude of change in landscape character within the geographic area of influence for Blue and Wallowa Foothills (BA-014) VAU and low cumulative magnitude of change within the Juniper and Sugarloaf Mountains (BA-025) VAU. The contribution of the Willow Creek Alternative to the cumulative magnitude of change in landscape character would be major within the Blue and Wallowa Foothills (BA-014) VAU because of the high direct magnitude of change in landscape character.

Willow Creek Alternative – Stationary and Linear Viewing Platforms

The incremental effect of the construction and operation of the Willow Creek River Alternative when added to the past, present, and RFFA would be a low cumulative impacts to views from the Steck Park BLM Recreation Site and the Oregon Trail ACEC Birch Creek stationary platforms. Willow Creek Alternative's contribution to the cumulative visual resource impact would be none because there would be negligible to no direct impacts to views from these two stationary platforms.

The incremental effect of the construction and operation of the Willow Creek Alternative when added to the past, present, and RFFA would result in a low cumulative impact in terms of scale when viewed along from I-84, the Oregon National Historic Trail, and the Snake River-Mormon Basin Back Country Byway linear platforms. The contribution of the Willow Creek Alternative to the cumulative visual resource impact would be none to minor, because the direct impact that would be created by the scale of this alternative would also create low contrast from the view from these linear platforms.

Willow Creek Alternative – Special Management Areas

There would be negligible direct impacts from the present and RFFA projects to views from the Oregon Trail- Birch Creek and Tub Mountain ACECs. Therefore, there would be no visual resources cumulative impacts to casual viewers from these two ACECs within the geographic area of influence from the Willow Creek Alternative.

Section of Proposed Action Equivalent to the Willow Creek Alternative – Scenic Quality

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality in the, Juniper and Sugarloaf Mountains (BA-05/FR-025), Caribou Bar (BA-027), Cow Valley (MA-016), Becker Creek (MA-009), Gum Creek (MA-012), and Moore Hollow (MA-040) VAUs and a moderate cumulative impact in the Blue Wallowa Foothills VAU (BA-014). Contribution to the cumulative visual resource impact would be major for Blue and Wallowa Foothills (BA-014) VAU because there would be moderate direct impacts to scenic quality within this VAU.

Section of Proposed Action Equivalent to the Willow Creek Alternative – Landscape Character

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would be a high cumulative magnitude of change to the landscape character within the geographic area of influence for Blue and Wallowa Foothills (BA-014) VAU and a low cumulative magnitude of change to landscape character within the Juniper and Sugarloaf Mountains (BA-025) VAU. The contribution of this section of the Proposed Action to the cumulative magnitude of change to the landscape character would be major in the Blue and Wallowa Foothills (BA-014) VAU because of the direct magnitude of change in landscape character would be high.

Section of Proposed Action Equivalent to the Willow Creek Alternative – Stationary and Linear Viewing Platforms

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would be a low cumulative impacts to views from the Steck Park BLM Recreation Site (7-6) stationary platform. This section of the Proposed Action's contribution to the cumulative visual resource impact to views would be none because there would be negligible direct impacts to views from this stationary platform.

The visual resources cumulative impacts on sensitive viewers from the I-84, Oregon National Historic Trail, the Snake River-Mormon Basin Back Country Byway, and US 26 linear platforms would be the same as the Willow Creek Alternative.

Section of Proposed Action Equivalent to the Willow Creek Alternative – Special Management Areas

There are no special management areas impacted by this section of the geographic area of influence for the Proposed Action.

Tub Mountain South Alternative- Scenic Quality

The incremental effect of the construction and operation of the Tub Mountain South Alternative when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality impact on scenic quality in the Blue and Wallowa Foothills (BA-014), Juniper and Sugarloaf Mountains (BA-025), and Caribou Bar (BA-027) VAUs. The Tub Mountain South Alternative's contribution to the cumulative visual resource impact would be minor because there would be low direct impacts to scenic quality within these VAUs within the geographic area of influence of the Tub Mountain South Alternative.

Tub Mountain South Alternative- Landscape Character

The incremental effect of the construction and operation of the Tub Mountain South Alternative when added to the past, present, and RFFA would be a high cumulative magnitude of change to the landscape character within the Blue and Wallowa Foothills (BA-014) VAU and a low cumulative magnitude of change to landscape character for the Juniper and Sugarloaf Mountains (BA-025) VAU. The contribution of the Tub Mountain South Alternative to the cumulative magnitude of change to the landscape character would be major in the Blue and Wallowa Foothills (BA-014) VAU because of the direct magnitude of change in landscape character would be high.

Tub Mountain South Alternative- Stationary Viewing Platforms

The incremental effect of the construction and operation of the Tub Mountain South Alternative when added to the past, present, and RFFA would be low cumulative impacts to views from the Steck Park BLM Recreation Site (7-6) stationary platform. Tub Mountain South Alternative's contribution to the cumulative visual resource impact to the casual viewers at the Steck Park BLM Recreation Site (7-6) would be none because there would be no direct impacts to views from this stationary platform.

Tub Mountain South Alternative- Linear Viewing Platforms

The incremental effect of the construction and operation of the Tub Mountain South Alternative when added to the past, present, and RFFA would result in a low cumulative impact in terms of scale when viewed along from I-84, the Oregon NHT, and the Snake River-Mormon Basin Back Country Byway linear platforms. The contribution of the Tub Mountain South Alternative to the cumulative visual resource impact would be minor because the direct impact that would be created by the scale of this alternative would also create low contrast from the view from these linear platforms.

Tub Mountain South Alternative- Special Management Areas

There would be negligible direct impacts from the present and RFFA projects to views from the Oregon Trail- Birch Creek and Tub Mountain ACECs. Therefore, there would be no visual resources cumulative impacts to casual viewers from these two ACECs within the geographic area of influence from the Tub Mountain South Alternative.

Section of Proposed Action Equivalent to the Tub Mountain South Alternative - Scenic Quality

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality impact within the Juniper and Sugarloaf Mountains (BA-025), Caribou Bar (BA-027), Cow Valley

Butte (MA-007), Becker Creek (MA-009), and Gum Creek (MA-12) VAUs and a moderate cumulative impact within the Blue and Wallowa Foothills (BA-014) VAU. The contribution to cumulative impact would be major within the Blue and Wallowa Foothills (BA-014) VAU and none within the Cow Valley Butte (MA-007) VAU because of the moderate and negligible direct impacts, respectively.

Section of Proposed Action Equivalent to the Tub Mountain South Alternative - Landscape Character

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would be a high cumulative magnitude of change to the landscape character within the geographic area of influence for Blue and Wallowa Foothills (BA-014) VAU and a low cumulative magnitude of change within the Juniper and Sugarloaf Mountains (BA-025) VAU. The contribution of this section of the Proposed Action to the cumulative magnitude of change to the landscape character would be major within the Blue and Wallowa Foothills (BA-014) VAU because of the direct magnitude of change in landscape character would be high.

Section of Proposed Action Equivalent to the Tub Mountain South Alternative - Stationary Viewing Platforms)

The incremental effect of the construction and operation of this segment of this segment of the Proposed Action's when added to the past, present, and RFFA would be a low cumulative impact to views from the Steck Park BLM Recreation Site (7-6) stationary platform. This segment of the Proposed Action's contribution to the cumulative visual resource impact to views from the Steck Park BLM Recreation Site (7-6) would be none because there would be no direct impacts to views from this stationary platform.

Section of Proposed Action Equivalent to the Tub Mountain South Alternative - Linear Viewing Platforms

The visual resources cumulative impacts on the views from I-84, Oregon NHT, and the Snake River-Mormon Basin Back Country Byway linear platforms would be the same as the Tub Mountain South Alternative.

Section of Proposed Action Equivalent to the Tub Mountain South Alternative - Special Management Areas

There are no special management areas impacted by the geographic area of influence for this section of the Proposed Action.

Segment 5—Malheur

The Malheur Segment is predominately undeveloped with the exception of the portion of the geographic area of influence near the communities of Adrian and Vale and the agricultural lands associated with the Owyhee and Snake rivers. Other notable cultural modifications include the Owyhee

Dam. To date the Grassy Mountain Gold Mine southwest of Vale has been identified as a RFFA, however no information on the specific amount of surface disturbance is currently available.

Proposed Action - Scenic Quality

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality impact in the Sourdough Basin (MA-041) VAU. The Proposed Action's contribution to the cumulative visual resource impact would be minor for the Sourdough Basin (MA-041) VAU because there would be low direct impact to scenic quality within this VAU from the Proposed Action.

Proposed Action - Landscape Character

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would result in a low cumulative magnitude of change to the landscape character in the Sourdough Basin (MA-041) VAU. The Proposed Action's contribution to the cumulative visual resource impact would be major for the Sourdough Basin (MA-41) VAU because there would be a high magnitude of change in the landscape character within this VAU from the Proposed Action.

Proposed Action - Stationary and Linear Viewing Platforms

There would be no potential impacts on views from stationary or linear platforms from past, present, or RFFAs and therefore there would be no cumulative impacts.

Proposed Action - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for the Proposed Action.

Double Mountain Alternative -Scenic Quality

The incremental effect of the construction and operation of the Double Mountain Alternative when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality impact in the Sourdough Basin (MA-041) VAU. The Double Mountain Alternative's contribution to the cumulative visual resource impact would be none for the Sourdough Basin (MA-041) VAU because there would be negligible direct impacts to scenic quality within this VAU within this alternative's geographic area of influence.

Double Mountain Alternative -Landscape Character

The incremental effect of the construction and operation of the Double Mountain Alternative when added to the past, present, and RFFA would be a high cumulative magnitude of change to the landscape character within the geographic area of influence of this alternative. The contribution of the Double Mountain Alternative to the cumulative magnitude of change to the landscape character would be major within the Sourdough Basin (MA-041) VAU because of the direct magnitude of change in landscape character would be high.

Double Mountain Alternative -Stationary and Linear Viewing Platforms

There would be no direct impacts from the present and RFFA projects to views from the three stationary or one (U.S. Highway 20) linear platforms. Therefore, there would be no visual resources cumulative impacts to views from these platforms within the geographic area of influence of the Double Mountain Alternative.

Double Mountain Alternative -Special Management Areas

There are no special management areas impacted by the Double Mountain Alternative.

Section of Proposed Action Equivalent to the Double Mountain Alternative - Scenic Quality

The incremental effect of the construction and operation of this section of the Proposed Action when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality impact in the Sourdough Basin (MA-041) VAU. This segment of the Proposed Action's contribution to the cumulative visual resource impact would be minor for the Sourdough Basin (MA-041) VAU because there would be low direct impact to scenic quality within this VAU from this section of the Proposed Action.

Section of Proposed Action Equivalent to the Double Mountain Alternative - Landscape Character

The magnitude of change to the existing landscape character in terms of cumulative impacts from this section of the Proposed Action would be the same as the Double Mountain Alternative as well as the contribution of this section of the Proposed Action to cumulative impacts to landscape character.

Section of Proposed Action Equivalent to the Double Mountain Alternative - Stationary and Linear Viewing Platforms

The visual resources cumulative impacts on views from the three stationary platforms and the U.S. Highway 20 linear platform would be the same as the Double Mountain Alternative.

Section of Proposed Action Equivalent to the Double Mountain Alternative - Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for this section of the Proposed Action.

Malheur S Alternative - Scenic Quality

The incremental effect of the construction and operation of the Malheur S Alternative when added to the past, present, and RFFA would result in a moderate cumulative impact on the overall scenic quality impact within the Sourdough Basin (MA-041) VAU. The Malheur S Alternative's contribution to the cumulative visual resource impact would be major for the Sourdough Basin (MA-041) VAU because there would be high direct impacts to scenic quality within this VAU.

Malheur S Alternative - Landscape Character

The magnitude of change to the existing landscape character in terms of cumulative impacts from the Malheur S Alternative would be the same as the Double Mountain Alternative.

Malheur S Alternative - Stationary and Linear Viewing Platforms

The incremental effect of the construction and operation of the Malheur S Alternative's when added to the past, present, and RFFA would be a moderate cumulative impact to views from the Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek Middle (8-93) stationary platform. The Malheur S Alternative's contribution to the cumulative visual resource impact to views from the Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek Middle (8-93) would be minor because there would be low direct impacts to views from this stationary platform.

There would be no direct impacts from the present and RFFA projects to views from the five linear platforms. Therefore, there would be no visual resources cumulative impacts to casual viewers from these platforms within the geographic area of influence of the Malheur S Alternative.

Malheur S Alternative - Special Management Areas

There would be no direct impacts from the future Grassy Mountain Gold Mine to views from the four SMAs. Therefore, there would be no visual resources cumulative impacts to casual viewers from these four SMAs within the geographic area of influence from the Malheur S Alternative.

Malheur Alternative A Alternative - Scenic Quality

The incremental effect of the construction and operation of the Malheur A Alternative when added to the past, present, and RFFA would result in a low cumulative impact on the overall scenic quality impact within the Sourdough Basin (MA-041) VAU. The Malheur S Alternative's contribution to the cumulative visual resource impact would be none for the Sourdough Basin (MA-041) VAU because there would be negligible direct impacts to scenic quality within this VAU.

Malheur Alternative A Alternative - Landscape Character

The magnitude of change to the existing landscape character in terms of cumulative impacts from the Malheur A Alternative would be the same as the Malheur S Alternative.

Malheur Alternative A Alternative - Stationary and Linear Viewing Platforms

The visual resources cumulative impacts on views from the Double Mountain Wilderness Characteristics Inventory Unit- Negro Rock Creek Middle (8-93) stationary platform would be the same as the Malheur S Alternative.

There would be no direct impacts from the present and RFFA projects to views from the five linear platforms. Therefore, there would be no visual resources cumulative impacts on views from these platforms within the geographic area of influence of the Malheur A Alternative.

Malheur Alternative A Alternative - Special Management Area

There would be no direct impacts from the future Grassy Mountain Gold Mine to views from the four SMAs. Therefore, there would be no visual resources cumulative impacts to casual viewers from these four SMAs within the geographic area of influence from the Malheur A Alternative.

Section of Proposed Action Equivalent to the Malheur S and Malheur A Alternatives - Scenic Quality

The visual resources cumulative impacts on scenic quality on Sourdough Basin (MA-041) VAU would be the same as the Malheur A Alternative.

Section of Proposed Action Equivalent to the Malheur S and Malheur A Alternatives - Landscape Character

There would be no direct impacts from the present and RFFA projects landscape character in the 14 VAUs. Therefore, there would be no cumulative impacts to the landscape character from these VAUs within the geographic area of influence of this section of the Proposed Action.

Section of Proposed Action Equivalent to the Malheur S and Malheur A Alternatives - Stationary and Linear Viewing Platforms

The visual resources cumulative impacts on views from 12 stationary and 5 linear platforms would have no impact from future RFFAs within the geographic area of influence for this section of the Proposed Action.

Section of Proposed Action Equivalent to the Malheur S and Malheur A Alternatives - Special Management Areas

There would be no direct impacts from the future Grassy Mountain Gold Mine to views from the Owyhee Below the Dam ACEC. Therefore, there would be no visual resources cumulative impacts to views from this SMA within the geographic area of influence from this section of the Proposed Action.

Segment 6—Treasure Valley

Proposed Action - Scenic Quality

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low cumulative impact on the overall scenic quality in the Hidden Valley (FR-030), Willow Spring (OW-006) and Treasure Valley (OW-019) VAUs within the Proposed Action’s geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be none/minor within the Proposed Action's geographic area of influence

Proposed Action - Landscape Character

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a moderate cumulative magnitude of change in the landscape character in the Willow Spring (OW-006) and a high cumulative magnitude of change in the landscape character in the Treasure Valley (OW-019) VAU within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative magnitude of change would be a major contribution within the Willow Spring (OW-006) and Treasure Valley (OW-019) VAUs within the Proposed Action's geographic area of influence because of the moderate and high direct impacts, respectively.

Proposed Action - Stationary Viewing Platforms

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low cumulative impact in terms of scale on views from the Snake River Overlook-Pump Road (10-17), Map Rock Campground (10-19), Givens Hot Springs Campground (12-4), Hemingway Butte Trailhead Off-highway Vehicle Recreation Site (12-5), China Ditch Road Rural Residential Area (12-13), Wilson Creek Trailhead and Wayside (12-21/12-22), and Eastern Terminus— Wilson Cemetery (12-23) stationary platforms within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact in terms of scale would be none/minor from the stationary platforms.

Proposed Action - Linear Viewing Platform

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a low cumulative impact in terms of scale on the views from the Snake River Canyon Scenic Byway and Western Heritage Historic Byway linear platforms within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be none/minor in terms of scale.

Proposed Action – Special Management Areas

There are no special management areas impacted by this portion of the geographic area of influence for this section of the Proposed Action.

Baker Field Office Draft Resource Management Plan and Environmental Impact Statement VRM

As previously noted, the Baker Field Office Draft Resource Management Plan was released to the public on November 15, 2011. When approved, the plan will replace the 1989 BLM Baker Resource Management Plan. The Draft Resource Management Plan identified Alternative 1 as the preferred alternative. The BLM will continue to refine the preferred alternative through the land use planning and NEPA process until the approved resource management plan and record of decision are signed. While the preferred alternative estimates the approved resource management plan, BLM can adjust the preferred alternative until the approved resource management plan and record of decision are signed.

Currently, of the 428,425 acres within the planning area of the RMP, lands classified as VRM Class I is 4 percent, Class II 33 percent, Class III 13 percent, and Class IV 49 percent. In Alternative 1, the proposed VRM Classes would be reclassified to VRM Class I would remain 4 percent, Class II 56 percent, Class III 33 percent, and Class IV 6 percent. Based on these proposed VRM Class designations, Table 3-321, Table 3-322, Table 3-323, Table 3-324, and Table 3-325 identify the noncompliance by KOPs for the Proposed Action and alternatives for the Baker Field Office under Alternative 1 of the Draft Resource Management Plan.

Table 3-321. Proposed BLM Baker Field Office Draft Resource Management Plan Alternative 1 Compliance by Key Observation Point—Proposed Action

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South) (Baker Field Office)	II III IV	86 0 0	Moderate	Does not meet N/A N/A
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North) (Baker Field Office)	II III IV	42 0 0	Moderate	Does not meet N/A N/A
5-25d Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Main Building) (Baker Field Office)	II III IV	1 0 0	Moderate	Does not meet N/A N/A
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment) (Baker Field Office)	II III IV	86 0 0	Moderate	Does not meet N/A N/A
5-33 Oregon Trail Ruts Interpretive Site (Baker Field Office)	II III IV	56 0 0	Strong	Does not meet N/A N/A
5-60 NHOTIC Entrance SH 86 (Baker Field Office)	II III IV	57 0 0	Strong	Does not meet N/A N/A
5-84 Virtue Flat OHV Area (Baker Field Office)	II III IV	107 0 0	Strong	Does not meet N/A N/A

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
Total Acres of Noncompliance	II III IV	435 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-322. Proposed BLM Baker Field Office Draft Resource Management Plan Alternative 1 Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Flagstaff Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North) (Baker Field Office)	II III IV	42 0 0	Moderate	Does not meet N/A N/A
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment) (Baker Field Office)	II III IV	86 0 0	Moderate	Does not meet N/A N/A
5-60 NHOTIC Entrance SH 86 (Baker Field Office)	II III IV	57 0 0	Strong	Does not meet N/A N/A
5-84 Virtue Flat OHV Area (Baker Field Office)	II III IV	107 0 0	Strong	Does not meet N/A N/A
Total Acres of Noncompliance	II III IV	292 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-323. Proposed BLM Baker Field Office Draft Resource Management Plan Alternative 1 Compliance by Key Observation Point—Burnt River Mountain Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-82 Durkee Community (Baker Field Office)	II III IV	47 0 0	Moderate	Does not meet N/A N/A
Total Acres of Noncompliance	II III IV	47 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-324. Proposed BLM Baker Field Office Draft Resource Management Plan Alternative 1 Compliance by Key Observation Point—Section of the Proposed Action Equivalent to the Timber Canyon Alternative

KOP Number and Name	VRM Class	BLM Acres Visible	Contrast Rating	Compliance
5-25a Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, South) (Baker Field Office)	II III IV	86 0 0	Moderate	Does not meet N/A N/A
5-25b Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Flagstaff Hill Trail, North) (Baker Field Office)	II III IV	42 0 0	Moderate	Does not meet N/A N/A
5-25e Oregon Trail ACEC - National Historic Oregon Trail Interpretive Center (Wagon Encampment) (Baker Field Office)	II III IV	86 0 0	Moderate	Does not meet N/A N/A
5-33 Oregon Trail Ruts Interpretive Site (Baker Field Office)	II III IV	56 0 0	Moderate	Does not meet N/A N/A
5-60 NHOTIC Entrance SH 86 (Baker Field Office)	II III IV	57 0 0	Strong	Does not meet N/A N/A
5-84 Virtue Flat OHV Area (Baker Field Office)	II III IV	107 0 0	Strong	Does not meet N/A N/A
Total Acres of Noncompliance	II III IV	434 0 0		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 3-325. Summary of Noncompliance with Draft Resource Management Plan Proposed VRM Class Objectives for BLM Baker Field Office

BLM Field Office	Alternative	VRM Class II Noncompliance (acres)	VRM Class III Noncompliance (acres)
Baker	Proposed Action	435	0
	Burnt River Mountain	47	0

3.3.4.8 Cultural Resources

Methodology

The cumulative effects analysis area for direct cumulative effects to cultural resources is defined as the 500 ft. transmission line right-of-way, a 100 ft. corridor centered on existing and new access roads, and a 250 ft. buffer surrounding staging areas, borrow areas, substations, and other construction areas. The analysis area for indirect cumulative effects to cultural resources is the area within five miles on either side of the transmission center line or the visual horizon, whichever is closer, based on the area of potential effects (APE) established in the project programmatic agreement (PA).

The cumulative effects to cultural resources are presented for the Proposed Action and the alternatives as a whole, rather than on a Project Segment basis. The RFFAs that could contribute to cumulative effects are shown in Table 3-326 and are identified by alternatives

Cumulative Effects Common to All Alternatives

Cumulative effects to cultural resources associated with the construction and operation of the B2H Project are common to the Proposed Action and all alternatives. Consulting parties to the Section 106 process, including Tribes, have indicated a concern that construction of infrastructure in undeveloped areas could result in indirect effects, such as increased public access and recreational activity in these areas. Increased access may amplify the potential for looting of archaeological sites and damage to other resources such as trails, markers, and historic structures. Consulting parties to Section 106 have also referenced the potential for new ROW and various reasonably foreseeable future actions to provide for the eventual collocation of utilities within or adjacent to the Boardman to Hemingway Transmission Line. This could further degrade the integrity of setting and increase visual impacts to cultural and historical resources within the indirect area of potential effects.

Anticipated cumulative effects from the reasonably foreseeable future actions will not be equivalent for all of the proposed, anticipated, or possible projects listed above. Many of these reasonably foreseeable future actions will or may occur well outside the area for indirect cumulative impact analysis for cultural resources, defined as five miles on either side of the transmission center line or the visual horizon, whichever is closer. Twenty-two reasonably foreseeable future actions (along with the various BLM management initiatives) are anticipated to overlap the area for indirect cumulative impact analysis for cultural resources. These actions include possible construction of the facilities listed in Table 3-326.

Table 3-326. Reasonably Foreseeable Future Actions that Overlap the Area for Indirect Cumulative Impact for Cultural Resources

Reasonably Foreseeable Future Action	Affiliated Route(s)
Longhorn Substation	Longhorn Alternative, Longhorn Variation
Perennial Wind Chaser Station (proposed transmission line only)	Longhorn Alternative, Longhorn Variation Alternative
Portland General Electric Boardman Plant Emissions Controls	Proposed Action, Horn Butte Alternative

Reasonably Foreseeable Future Action	Affiliated Route(s)
Umatilla Electric Cooperative Transmission Line	Proposed Action, Horn Butte Alternative
Gas Transmission Northwest Carty Lateral Project	Proposed Action, Horn Butte Alternative
Saddle Butte Wind Park	Proposed Action, Horn Butte Alternative
Rackspace Data Center	Longhorn Alternative, Longhorn Variation
High Bar/Upper and Lower Pine Creek Placer Mining Project	Proposed, Burnt River Alternative
Neal Hot Springs Geothermal	Proposed Action, Tub Mountain South
Grassy Mountain Gold Mine	Malheur A Alternative
Coal Transfer Station	Longhorn Alternative, Longhorn Variation Alternative
Huntington Windfarms	Proposed Action, Tub Mountain Alternative, Willow Creek Alternative
Lime Windfarms	Proposed Action, Tub Mountain Alternative, Willow Creek Alternative
Naval Weapons System Training Facility Boardman	Proposed Action, Horn Butte Alternative, Longhorn Alternative, Longhorn Variation Alternative
Gateway West Transmission Line	Proposed Action
Multi-species Candidate Conservation Agreement— Habitat Conservation	Longhorn Alternative, Longhorn Variation
Baker Habitat Restoration and Fuels Treatment Projects	Proposed Action, Flagstaff Alternative
Mormon Basin Fuels Treatment	Proposed Action, Timber Canyon Alternative, Burnt River Alternative, Willow Creek Alternative, Tub Mountain South Alternative

Several of these projects, including several transmission lines, overlap the proposed 500-foot analysis area for the B2H Project. Construction, operation, and maintenance of these projects could present cumulative direct impacts to cultural resources identified within the analysis area for direct effects for the B2H Project. These reasonably foreseeable future actions are not anticipated to produce cumulative impacts to cultural resources within the indirect cumulative impact analysis for cultural resources.

Consultation with NPS, OCTA, and OHTAC indicates concern with direct and indirect impacts of the project to trails in the B2H project area, especially segments of the Oregon NHT and Lewis and Clark NHT. Government to government consultation with Tribes indicates concern with direct and indirect impacts of the project construction to archaeological resources, features of the built environment, cultural landscapes, and plant and animal species- all of which are considered important cultural resources. The Tribes have also indicated that electrification of the environment will also have the adverse effect of accelerating degradation of traditional cultural practices or inhibiting access to traditional cultural places. Through ethnographic study, tribal members have indicated that they consider areas spanned by power lines to have negative impacts on spiritual activities that are important to maintaining personal, family, and community health and wellbeing, as well as education of young tribal members in key aspects of traditional practices. The Tribes have indicated that they believe that the adverse impacts to these resources would be common to the Proposed Action and all alternatives.

3.3.4.9 National Historic Trails

Methodology

The geographic area of influence for the analysis of cumulative impacts to the Oregon and Lewis and Clark National Historic Trails and Study Trails (Goodale's and Meeks) is defined as the viewshed within a 10-mile distance of the centerlines of the Proposed Action and alternatives. All present actions and RFFAs within this geographic area of influence with effects that could be cumulative with the effects of the Proposed Action and alternatives were evaluated. The present actions and RFFAs are listed in Table 3-315.

The individual effects of all past actions to determine the present effects of past action would not be useful to predict the cumulative visual effects of the Proposed Action or alternatives. The consideration of past actions is reflected in current National Historic Trail (NHT)/Study Trail conditions as established in the affected environment baseline conditions. For this analysis, cumulative NHT/Study Trail impacts for the geographic area of influence are the combined direct effects of the present and RFFAs plus the direct impacts of the Proposed Action and alternatives. The contribution to NHT/Study Trail cumulative impacts by the Proposed Action and alternatives are assessed in terms of the effect of the scale/spatial relationship of the actions from these sensitive linear viewing platforms.

Each of the alternatives is evaluated using the same criteria as the direct impact methodology with some modifications (refer to Section 3. 2.9.5). The modifications include looking at the potential from a more qualitative approach and not separating the foreground from the middleground impacts, where applicable. The visibility conditions, quantification of view, and angle of observations from the viewing platforms of the RFFA are not evaluated because the specifics (such as the height, building configuration, layout of turbines, design features, alignment of transmission lines, and transmission tower types) of the project components associated with the actions are not known at this time.

Unless otherwise noted, the middleground level of direct impact created by the Proposed Action and alternatives was used to determine the level of cumulative impacts when considered with the present actions and RFFA. The levels of direct and cumulative impacts are categorized as high, moderate, or low impact based on the same thresholds as defined in Section 3.2.9.5. If the direct impacts to sensitive viewers were considered to be none or negligible as a result of the construction and maintenance of the Proposed Action or alternatives, there would be no contribution to cumulative impacts. In addition, there would be no cumulative impacts if there would be no direct impacts from present and RFFA because either there were no identified actions within the geographic area of influence or the actions would result in negligible or no impacts. The level of contribution to cumulative impacts by the Proposed Action and alternatives are defined as minor (measured by a low direct impact created by the Proposed Action or alternative) or major (moderate or high direct impacts created by the Proposed Action or alternative).

The following narrative summarizes the cumulative visual resources impacts by segment and alternative (see also Appendix H for supporting data). The cumulative impacts to these geographic areas are discussed before the Proposed Action and alternatives by segment. There would be no cumulative visual resources impacts associated with the alternatives in Segment 2 because there are no notable RFFAs with the alternative's geographical area of influence. In addition, geographic areas are not included in the summary narrative if no cumulative impacts are anticipated.

PROPOSED ACTION

The incremental effect of the construction and operation of the Proposed Action when added to the past, present, and RFFA would have a moderate cumulative impact in terms of scale on views from the Oregon NHT within the Proposed Action's geographic area of influence. The contribution of the Proposed Action to the cumulative visual resource impact would be minor in terms of scale because of the low direct impacts to the views from the Oregon NHT linear platform within the Proposed Action's geographic area of influence.

For the Goodale's Cutoff and Meet Cutoff Study Trails there would be no direct impact from past, present, and RFFA within the Proposed Action's geographic area of influence. Therefore, there would be no cumulative impact to the two study trails.

ALTERNATIVES

SEGMENT 1-MORROW-UMATILLA

The incremental effect of the construction and operation of the Longhorn and Horn Butte alternatives, Longhorn Variation and the equivalent sections the Proposed Action when added to the past, present, and RFFA would each result in a high cumulative impact in terms of scale and contrast when viewed along the Oregon NHT. The contribution of the Longhorn and Horn Butte alternatives, Longhorn Variation and the equivalent sections the Proposed Action to the cumulative impact in terms of scale and contrast would be major because there would be moderate direct impacts to views from the Oregon National Historic Trail with each of the alternatives.

For the Lewis and Clark Trail National Historic Trail, the incremental effect of the construction and operation of the Longhorn Variation and Longhorn Alternative when added to the past, present, and RFFA would not result in any cumulative impacts. Therefore there would be no contribution by these two alternatives to cumulative impacts,

SEGMENT2-BLUE MOUNTAINS

There are no identified RFFAs within the geographic area of influence within this segment that would potentially affect NHT/Study Trail resources. Therefore, there would be no cumulative impacts associated with the Glass Hill Alternative or the equivalent section of the Proposed Action within Segment 2.

Segment 3-Baker Valley

Land use in this segment is dominated by agriculture, rangeland, and forested areas. Baker and Durkee valleys are located north and south from Baker City, respectively, are both intensively farmed areas in the county. The most notable existing cultural modifications are the communities of Baker City, Durkee, Haines, Huntington, Keating, Lime, New Bridge, and Richland and the associated agricultural land use. The construction of the approximately 14 wind turbines associated with the future Huntington and Lime wind energy facilities would physically occur within the Segment 4-Brogan Area. However, the visibility of the future wind energy facilities would extend beyond the segment boundaries and depending on the configuration and layout of the wind turbines would potentially be visible within Segment 3. Other RFFAs within Segment 3 would include the High Bar/Upper and Lower Pine Creek Placer Mining Project east of Hereford that would disturb up to 250 acres for mineral extraction.

There would be negligible direct impacts from the present and RFFA projects to views from the Oregon NHT within Segment 3. Therefore, there would be no visual resources cumulative impacts to views from this linear platform within the geographic areas of influence of the Burnt River Alternative or the equivalent section of the Proposed Action.

Segment 4-Brogan Area

The land use within the Brogan Segment is currently primarily undeveloped land and agricultural land uses along the major creeks/rivers. The most notable existing cultural modifications are the rural communities of Vale, Jamieson, and Brogan, the existing Malheur Queen Placer Mine in north-central Malheur County, and the Neal Hot Springs Geothermal facility northwest of Vale. With the construction of the future Huntington and Lime Windfarms, there would be approximately 14 wind turbines added to the landscape. The visibility of the future wind energy facilities would depend on the configuration and layout of the wind turbines.

The incremental effect of the construction and operation of the Willow Creek Alternative and the equivalent section of the Proposed Action when added to the past, present, and RFFA would result in low cumulative impacts in terms of scale and contrast when viewed along from the Oregon NHT. The contribution of the Willow Creek Alternative and the Proposed Action to the cumulative visual resource impact would be none, because the direct impact that would be created by the scale of this alternative would create negligible contrast from the view from this linear platform.

There would be negligible direct impacts from the present and RFFA projects to views from the Goodale’s Cutoff Study Trail within Segment 4. Therefore, there would be no visual resources cumulative impacts to views from this linear platform within the geographic areas of influence of the Willow Creek Alternative.

The incremental effect of the construction and operation of the Tub Mountain South Alternative when added to the past, present, and RFFA would result in a low cumulative impact in terms of scale when viewed along the Oregon NHT. The contribution of the Tub Mountain South Alternative to the cumulative visual resource impact would be minor because the direct impact that would be created by the scale and contrast of this alternative would also create low contrast from the view from these linear platforms. The cumulative impact and contribution to the cumulative along the Oregon NHT would be the same for the equivalent section of the Proposed Action's geographic area of influence in Segment 4.

There would be negligible direct impacts from the present and RFFA projects to views from Goodale's Cutoff Study Trail. Therefore, there would be no visual resources cumulative impacts to views from these platforms within the geographic area of influence of the Tub Mountain South Alternative.

There would be no direct impacts from the present and RFFA projects to views from Meek Cutoff Study Trail. Therefore, there would be no visual resources cumulative impacts to views from these platforms within the geographic area of influence of the equivalent section of the Proposed Action.

.SEGMENT 5-MALHEUR

There would be no direct impacts from the present and RFFA projects to views from the Meek Cutoff Study Trail or Oregon NHT. Therefore, there would be no visual resources cumulative impacts to casual viewers from these platforms within the geographic areas of influence of the Malheur S and Malheur A alternatives or the equivalent section of the Proposed Action.

SEGMENT 6—TREASURE VALLEY

There would be no cumulative impacts with regard to NHT/Study Trail resources within Segment 6 because there are no NHT/Study Trail segments that would have views of the alternatives in this area. The cumulative impacts associated with the Proposed Action's geographic area of influence on the Oregon NHT are described prior to the segment descriptions in this section of the document.

3.3.4.10 AIR QUALITY AND CLIMATE CHANGE

METHODOLOGY

The cumulative effects analysis area for air quality is air quality control regions crossed by the Proposed Action and alternative centerlines and access roads and ancillary facilities. The analysis area for climate change is the counties through which the Proposed Action and alternatives would pass. These analysis areas were selected to provide an understanding of current air quality in Oregon and Idaho, to identify present projects that contribute to air quality degradation and climate change, and to understand how the electric generation carried by the Boardman to Hemingway and other transmission lines, present and proposed, contribute to air quality and climate change issues.

Cumulative effects to air quality would be common to all alternatives and across all Project Segments.

CUMULATIVE EFFECTS COMMON TO ALL ALTERNATIVES

Past and present actions (Table 3-314) have contributed to the current air quality conditions. Direct and indirect effects of emissions sources from reasonably foreseeable future actions (Table 3-315) within the analysis area would contribute to cumulative impacts to air quality and climate change. Emission sources would include construction activities, ground excavation, land clearing, vehicle emissions, fugitive dust, and stationary source emissions from operation and maintenance activities. These emissions would result in minor and temporary effects on air quality in the immediate vicinity. Furthermore, the reduction in coal-related emissions from the planned improvements to the Boardman Plant would help to offset the emissions from the B2H Project.

Emissions resulting from reasonably foreseeable future projects would be designed, managed, and planned consistent with air quality laws, rules, regulations, and attainment plans established by EPA, Oregon Department of Environmental Quality, and Idaho Department of Environmental Quality. Cumulative effects to air quality and climate change would be low.

3.3.4.11 Social and Economic Conditions

Methodology

The analysis area for cumulative socioeconomic effects includes the counties crossed by Proposed Action and alternative routes; plus cities within 50 miles of the Proposed Action and alternative centerlines. The analysis area also includes each Census Tract, Block, and Group crossed by Proposed Action and alternative centerlines. The analysis area corresponds with the direct and indirect socioeconomic analysis area and includes the constituent municipalities and potentially affected populations. For environmental justice, the cumulative effects analysis area includes counties and Census Block Groups crossed by the Proposed Action and alternative centerlines. The cumulative effects analysis area corresponds with the direct and indirect environmental justice analysis area.

Cumulative Effects Common to All Alternatives

The construction of the B2H project combined with the past and present actions (Table 3-314) and reasonably foreseeable future actions (Table 3-315) could affect the population, temporary housing, and the economy. Reasonably foreseeable future actions could cumulatively result in a short-term increase in population due to temporary workers. Section 3.2.11 projects a population increase of 243 people related to the construction of segment 1 and 251 people related to construction of segment 2. This population increase represents a 0.2 percent increase of the population in Morrow, Umatilla, Union, and Baker counties and a 0.4 percent increase of the population in Baker, Malheur, and Owyhee counties. Increased population numbers due to reasonably foreseeable future actions are not available. Overlapping construction schedules of the B2H project and reasonably foreseeable future actions could magnify the cumulative effect, particularly in the area of spread 1, if other large projects are under construction at the same time. However, based on the population increases for the B2H project, the increases in population would be short-term and low.

The short-term increase of temporary workers with other reasonably foreseeable future construction projects that coincide with the B2H Project, could result in shortages in housing for temporary construction workers. These shortages would depend on actual construction schedules and demand from other sectors of the economy such as travel and tourism. Based on the supply of local housing and lodging, the cumulative effects would be localized, short-term, and low and would not cumulative add to the long-term housing demand.

Project-related expenditures, employment, and construction-related earnings from the B2H Project would have a positive impact on the local economy and employment for the duration of construction. These impacts would be increased if other reasonably foreseeable future construction activities coincide with the Project. The resulting cumulative effects would be positive and short-term. Long-term economic impacts from the B2H Project would be associated with operation and maintenance-related expenditures on materials and supplies. These economic impacts would be small, especially when compared to the construction-related impacts, and the incremental addition of these impacts to other ongoing and reasonably foreseeable projects would be low.

3.3.4.12 Public Health and Safety

Methodology

The cumulative effects analysis are for noise during construction is the area 1,000 feet from construction noise sources. During operation, the cumulative effects analysis area is the 250 foot right-of-way. These analysis areas are areas beyond which no noise from construction or operation of Boardman to Hemingway would be detectable above USEPA recommended levels. The cumulative effect s analysis area for electro-magnetic effects is the 250 foot right-of-way in areas occupied by people (permanently or temporarily, as in recreation sites) crossed by the Proposed Action and alternative centerlines, access roads, and ancillary facilities. This analysis area is identified because electrical effects, including magnetic field and stray voltage, do not occur beyond the right-of-way width.

Cumulative impacts to public health and safety would be common to all alternatives.

Cumulative Effects Common to All Alternatives

Noise impacts of the B2H Project would occur primarily during the construction phase. The timing of RFFAs in the cumulative effects analysis area for noise is not known at this time. If other noise-generating projects were to occur during construction of the B2H Project, there could be cumulative noise effects locally in the area of construction. In areas where the B2H Project would be adjacent to other existing or RFFA transmission lines, the combined noise could be locally higher as a result of cumulative effects.

Energizing the transmission lines creates electromagnetic fields that would vary hourly, daily, and seasonally based on line loading and environmental factors. The modeled electromagnetic fields described in Section 3.2.12 are within the established standards. Where existing transmission lines are in close proximity to the B2H Project, cumulative effects of locally higher electromagnetic effects could occur. No other RFFA generators of electromagnetic fields are within the cumulative effects analysis area (the 250 foot Right-of-way). As a result, overall cumulative effects are anticipated to be low.

3.3.5 Irreversible and Irretrievable Commitment of Resources

Resources committed to the project would be material and nonmaterial including financial resources. Irreversible commitment of resources for the purposes of this section mean that those resources once committed would continue to be committed during the life of the project. Irretrievable commitment of resources means that those resources used, consumed, destroyed, or degraded during construction, operation, or maintenance could not be retrieved for future use. Irreversible and irretrievable commitments of resources are summarized in Table 3-327.

Table 3-327. Irreversible and Irretrievable Commitment of Resources

Resource	Type of Commitment/ Reason for Commitment	Irreversible	Irretrievable
Earth Resources	• Soil loss and erosion • Aggregate • Construction activities	No	Construction phase
Water Resources	• Water • Construction materials	Yes	Yes, during the construction phase
Vegetation Resources	• Disturbance to and/or loss of vegetation • Construction and operation	Yes	Yes, throughout the project life
Wildlife Resources	• Disturbance to and/or loss of habitat and wildlife species • Construction and operation	Yes	Yes, throughout the project life
Fish Resources	• Disturbance to and/or loss of habitat and fish species • Construction and operation	Yes	Yes, throughout the project life
Land Use, Agriculture, Recreation, and Transportation	• Disturbance to agricultural operations • Conversion of land use from agricultural to development • Increased access along new roads • Construction and operation	Yes	Yes, throughout the project life
Visual Resources	• Degradation of scenic quality • Change in landscape character • Degradation of views from sensitive platforms • Construction and operation	Yes	Yes, throughout the project life
Cultural Resources	• Disturbance or removal of sites • Access roads leading to increased vandalism • Construction and operation	Yes	Yes, throughout the project life
National Historic Trails	• Degradation of National Trail historic and cultural setting • Degradation of National Trail views from sensitive platforms • Degradation of National Trail historic and cultural resources • Construction and operation	Yes	Yes, throughout the project life
Air Quality and Climate Change	• Combustion emissions • Fugitive dust emissions • Construction and operations	No	No

Resource	Type of Commitment/ Reason for Commitment	Irreversible	Irretrievable
Socioeconomics and Environmental Justice	• Increased regional and local employment • Increased procurement of materials and equipment • Increased economic activity • Construction and operations	Yes	Yes, throughout the project life
Public Health and Safety	• Increased noise levels during construction • Increased electric and magnetic fields • Construction and operation	Yes	Yes, throughout the project life

3.4 Plan Amendments

3.4.1 Introduction

As described in Chapter 1, actions approved or authorized by the federal land-managing agencies must conform to current land use plans for the lands they administer (43 CFR 1610.5-3 [BLM] and 36 CFR 214 [USFS]). A land use plan amendment may be necessary in order to consider a proposed action that may result in a change in the scope of resource uses or a change in the decisions of the approved land use plan.

Some aspects of the Proposed Action and alternatives do not conform to current management direction in one or more of the relevant land use plans. For some specific portions of the Project along the alternatives, where avoidance was not possible, or where application of all feasible mitigation measures was determined through project-specific analysis to be insufficient to bring the Project into conformance with the administering federal agency's land-use plan, a Land Use Plan amendment would be required to amend decisions in the land use plans to accommodate the Project. Land use plan amendments would be required to allow approval of the B2H Project.

The Proposed Action and alternatives would cross BLM-administered lands managed under the Baker Resource Management Plan (RMP) in Oregon (BLM 1989), the Southeastern Oregon (SEORMP) in Oregon (BLM 2002), and the Owyhee RMP in Idaho (BLM 1999) and would also cross National Forest System lands managed under the Wallowa-Whitman National Forest Land and Resource Management Plan (LRMP) (USFS 1990). The current management direction for each plan, a description of the plan provisions that would need to be amended and a description of the effects of the amendment are described in this section.

Planning issues and criteria are based on input from BLM, the public, other federal agencies, state government, local government, and Tribal governments. Chapter 1 contains a detailed list of issues identified through public scoping. Below is a subset of issues relevant to the plan amendments.

- What effects will the project have on conservation and special-designation lands like areas of critical environmental concern or suitable wild and scenic rivers?
- What forest plan and RMP amendments will be needed?
- How would the project affect designated scenic byways?
- Does the project conform to existing federal visual resource management objectives?

3.4.2 Plan Conformance

Aspects of the Proposed Action and alternatives do not conform to current management direction in three of the applicable land use plans; the BLM Baker RMP, the BLM SEORMP and the USFS Wallowa-Whitman National Forest LRMP. Most of the land use plan amendments needed to bring the Project alternatives into conformance would be limited to specific portions of the 250-feet right-of-way and the boundaries of ancillary facilities. In this case, the planning area boundaries are limited to the proposed 250-feet right-of-way on lands administered by the relevant BLM field office or USFS.

Instances where the B2H Project is not in conformance with applicable land use plans or objectives include:

- BLM visual resource management classifications
- USFS visual quality objectives
- USFS Eastside Screens – Interim Wildlife Management

3.4.2.1 BLM Baker Resource Management Plan

The Baker RMP/Record of Decision (BLM 1989) provides direction for managing public lands under the jurisdiction of the Vale District Office within the Baker Resource Area. The Baker RMP planning area encompasses approximately 428,425 acres bordered by the Snake River to the east, the southern portion of Asotin County in Washington and the Columbia River to the north, and by Gilliam, Wheeler, Grant, and Malheur counties in Oregon to the west and south. The plan includes provisions to protect or enhance cultural resources, soil, water, botanical resources, visual resources, recreational opportunities, and other resources.

Visual Resources Management

Visual resources in the Baker RMP planning area have been classified according to BLM's Visual Resource Management (VRM) criteria. These criteria include scenic quality, visual sensitivity, and viewing distance and have resulted in four VRM classifications. Each VRM classification defines management objectives and the degree of visual change that will be acceptable within a landscape.

The Baker RMP includes management direction for VRM Class II, III, and IV lands. These VRM Classes are identified on Map 5 and listed in Table 10 in the Baker RMP. BLM management direction for the VRM classes is:

- Class I - The objective of this classification is to preserve the existing character of the landscape. This class provides for natural ecological changes, and it allows limited management activity. The level of change should be very low and must not attract attention. Class I is assigned to those areas where a management decision has been made to preserve a natural landscape. This includes areas such as wilderness, the wild sections of NWSR's, and other congressionally and administratively designated areas.
- Class II -The objective of this classification is to retain the existing character of the landscape. The level of change to landscape characteristics should be low. Management activities may be seen but should not attract the attention of a casual observer. Any changes must conform to the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This class represents the minimum level of VRM for WSA's.
- Class III - The objective of Class III is to partially retain the existing character of the landscape. Moderate levels of change are acceptable. Management activities may attract attention but should not dominate the view of a casual observer. Changes should conform to the basic elements of the predominant natural features of the characteristic landscape.
- Class IV - The objective of Class IV is to provide for management activities that require major modification of the landscape. These management activities may dominate the view and

> become the focus of viewer attention. However, every effort should be made to minimize the impact of these projects by carefully locating activities, minimizing disturbance, and designing the projects to conform to the characteristic landscape.

PURPOSE AND NEED TO AMEND THE BLM BAKER RESOURCE MANAGEMENT PLAN

Because of the visual contrast, the Proposed Action would not be in conformance with VRM Class III objectives established in the RMP for the area near the National Historic Oregon Trail Interpretive Center near Baker, Oregon. The VRM class designations and the 250-foot Proposed Action right-of-way that are not in conformance are shown in red in Figure 3-73. The purpose of the RMP amendment would be to modify the Baker RMP regarding visual resource management in order to grant a right-of-way for the Proposed Action across BLM-administered lands managed under the Baker RMP.

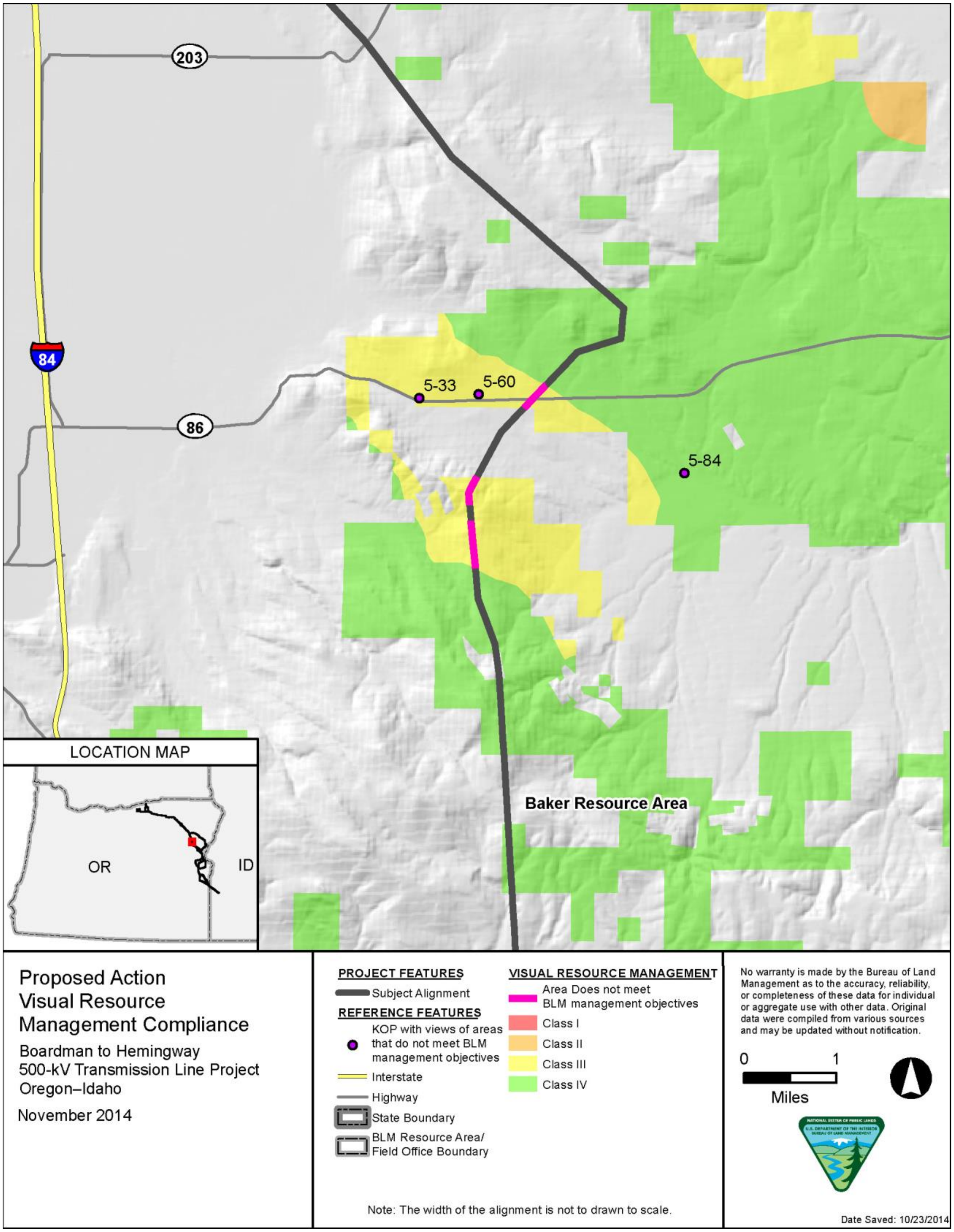


Figure 3-73. Proposed Action Visual Resource Management Compliance

Description of Potential Plan Amendment

In order to authorize the Proposed Action, the Baker RMP would need to be amended at the Visual Resources section beginning on page 49 to add the following language:

> "The portion of the 250-feet-wide right-of-way for the Boardman to Hemingway Transmission Project within VRM Class III lands in the vicinity of the National Historic Oregon Trail Interpretive Center located in portions of:
>
> - Township 9S, Range 41E, Sections 4 and 5 from project mileposts 156.0 and 156.3 (approximately 0.3 miles),
> - Township 9S, Range 41E, Section 8 from project mileposts 157.3 to 157.6 (approximately 0.3 miles), and
> - Township 9S, Range 41E, Section 17 from project mileposts 157.8 to 158.2 (approximately 0.4 miles)
>
> would be amended to VRM Class IV (a total of approximately 70 acres) for only those portions of the Project that would still exceed acceptable levels of change within the VRM Class III areas after application of all feasible measures to reduce impacts on visual resources is exhausted."

Effects

In areas where the visual resources classification is changed from Class III to Class IV, an amendment would result in the area being managed at a lower protection level. Amending the land use plan would result in 70 less acres in VRM Class III and 70 more acres in VRM Class IV (currently there are approximately 276,425 acres of Class III/IV).

The following components of the Visual Resource Inventory (VRI) are located within the Project area boundary: Scenic Quality Rating Units: 70 acres of Class B lands; Sensitivity Level Rating Units: 70 acres of high sensitivity lands; Distance Zones: 70 acres in the Background distance zone; VRI Class: 70 acres of VRI Class II lands.

Amending a portion of the VRM Class designation from VRM Class III to VRM Class IV would allow changes to the characteristic landscape to increase from needing to partially retain landscape character to accept instead, major modification of the landscape character. Management activities that under the existing VRM Class could attract attention but not dominate the view would be allowed to dominate the view and be a major focus of viewer attention. The change of current planning direction would result in, but not be limited to, the allowance of the Project.

3.4.2.2 BLM Southeastern Oregon Resource Management Plan

The Southeastern Oregon RMP (BLM 2002) provides direction for managing public lands within the Malheur and Jordan Resource Areas of the BLM Vale District. The Southeastern Oregon RMP planning area covers approximately 4.6 million acres of BLM-administered land mainly located in Malheur County, with some lands in Grant and Harney counties. The planning area is bounded on the east by Idaho, on the south by Nevada, on the north by the Vale District's Baker Resource Area, and on the west by the BLM Burns District's Three Rivers and Andrews Resource Areas. Most of the public land is contiguous, with some scattered or isolated parcels.

Visual Resources Management

Visual resources in the Southeastern Oregon RMP are managed with the same VRM classifications and management direction as described for the Baker RMP. Visual management objectives and management actions in the Southeastern Oregon RMP are as follows:

> "Objective: Manage public land actions and activities in a manner to be consistent with visual resource management (VRM) class objectives.
>
> Management Actions: Public lands within the planning area will be managed as depicted on Map VRM. Table 12 shows VRM classifications. Visual resources in ACEC's will be managed as displayed in Table 13. WSA's, managed in accordance with current policy, will be managed under VRM Class I, subject to any change to current policy. Upon congressional designation of wilderness, any area congressionally released from further wilderness consideration will be managed under VRM Class II, unless inventory shows it to be Class I. Management of the Main, West Little, and North Fork Owyhee NWSR's and administratively suitable study rivers with a tentative wild classification will be managed as VRM Class I. The corridor of the South Fork Indian Creek study river in MRA will be managed as VRM Class II. Manage as VRM Class III, when needed, those administrative sites, recreation sites, and other specific sites requiring developed support facilities to meet public health and safety requirements or to enhance approved resource based recreation use opportunities."

Purpose and Need to Amend the BLM Southeastern Oregon Resource Management Plan

The BLM's land use planning regulations at 43 CFR 1610.5-5 state, "an amendment shall be initiated by the need to consider a Proposed Action that may result in a change in the scope of resources uses or a change in the terms, conditions, and decisions of the approved plan."

Because of the visual contrast produced by the project, after the application of appropriate selective mitigation measures the visual effects of the following areas would not be compliant with the Visual Resource Management Class for these areas. The Tub Mountain South Alternative would not be in conformance with VRM Class III objectives established in the RMP for areas near segments of the National Historic Oregon Trail ACEC (Figure 3-74 and Figure 3-75). The Proposed Action would not be in conformance with VRM Class II objectives established for the suitable Owyhee River Below the Dam Wild and Scenic River Segment. The Malheur A and Malheur S Alternatives would not be in conformance with Class II objectives established for the Owyhee River Below the Dam ACEC and the suitable Owyhee River Below the Dam Wild and Scenic River Segment.

The VRM class designations and the areas of the 250 foot Proposed Action and Malheur S and Malheur A Alternatives rights-of-way that are not in conformance with the VRM classifications are shown on Figure 3-76, Figure 3-77, and Figure 3-78. The purpose of the RMP amendment would be to modify the Southeastern Oregon RMP regarding visual resources management in order to grant a right-of-way for the Proposed Action, the Tub Mountain South Alternative, the Malheur S Alternative, or the Malheur A Alternative across BLM-administered lands managed under the Southeastern Oregon RMP.

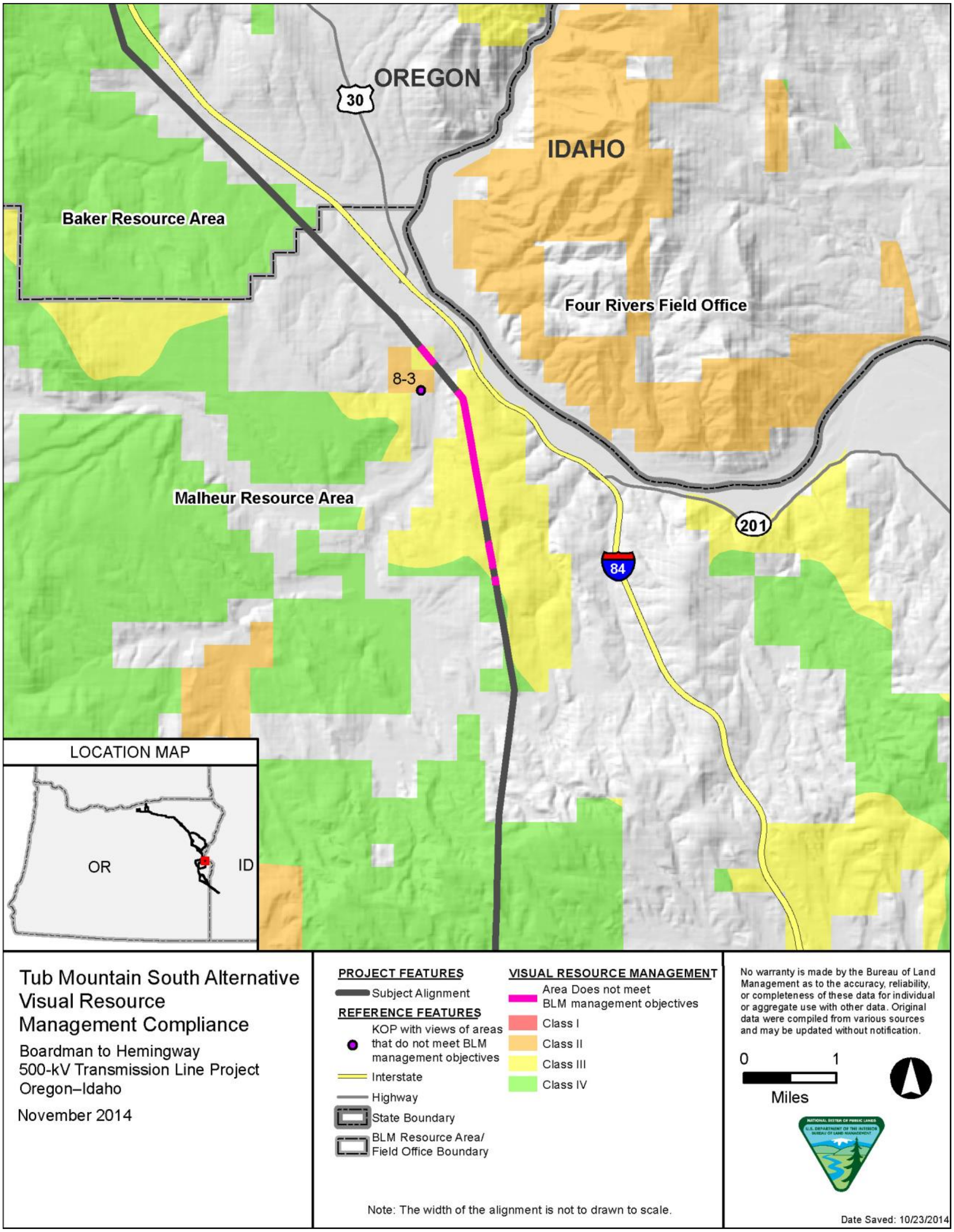


Figure 3-74. Tub Mountain South Alternative Visual Resource Compliance

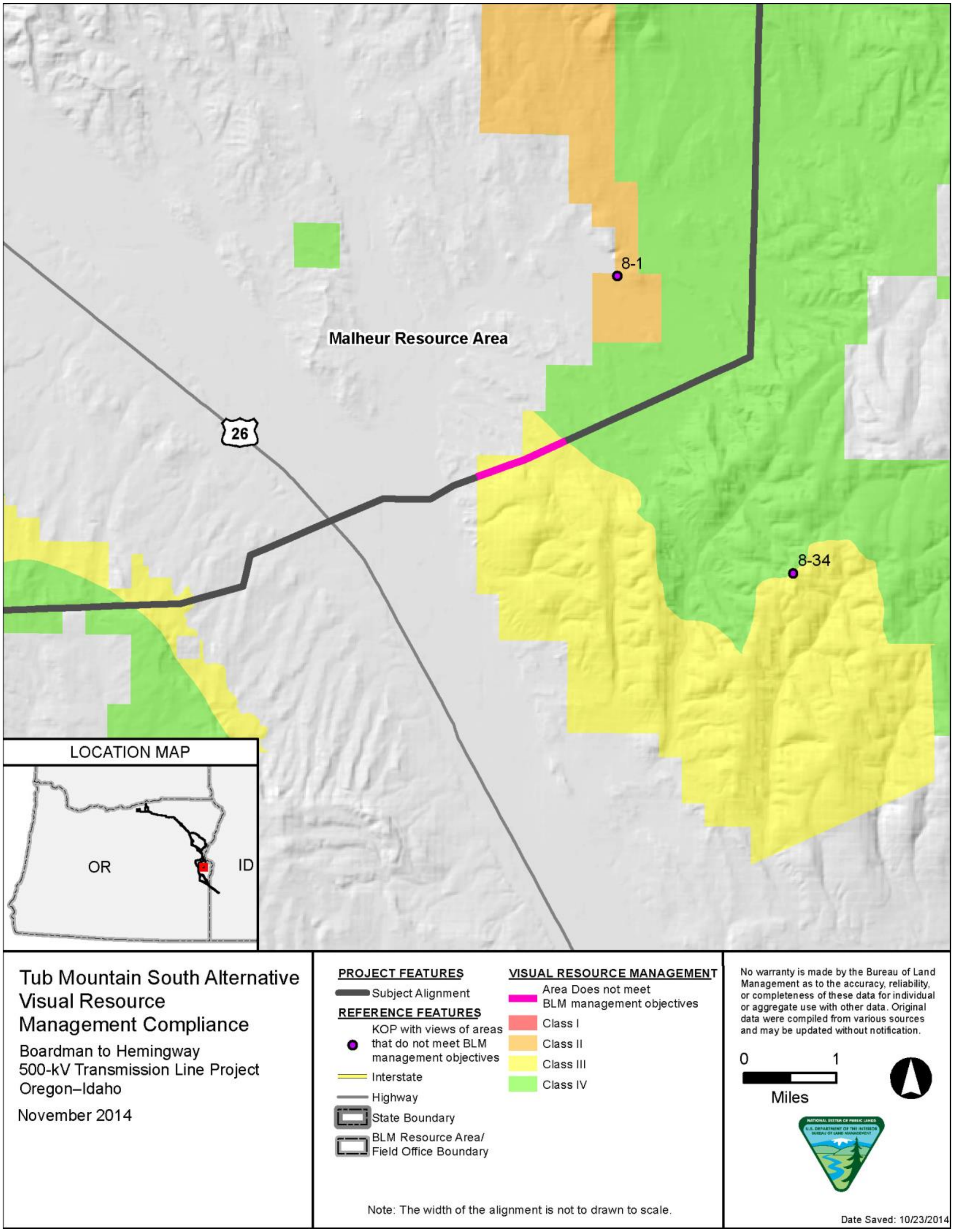


Figure 3-75. Tub Mountain South Alternative Visual Resource Compliance

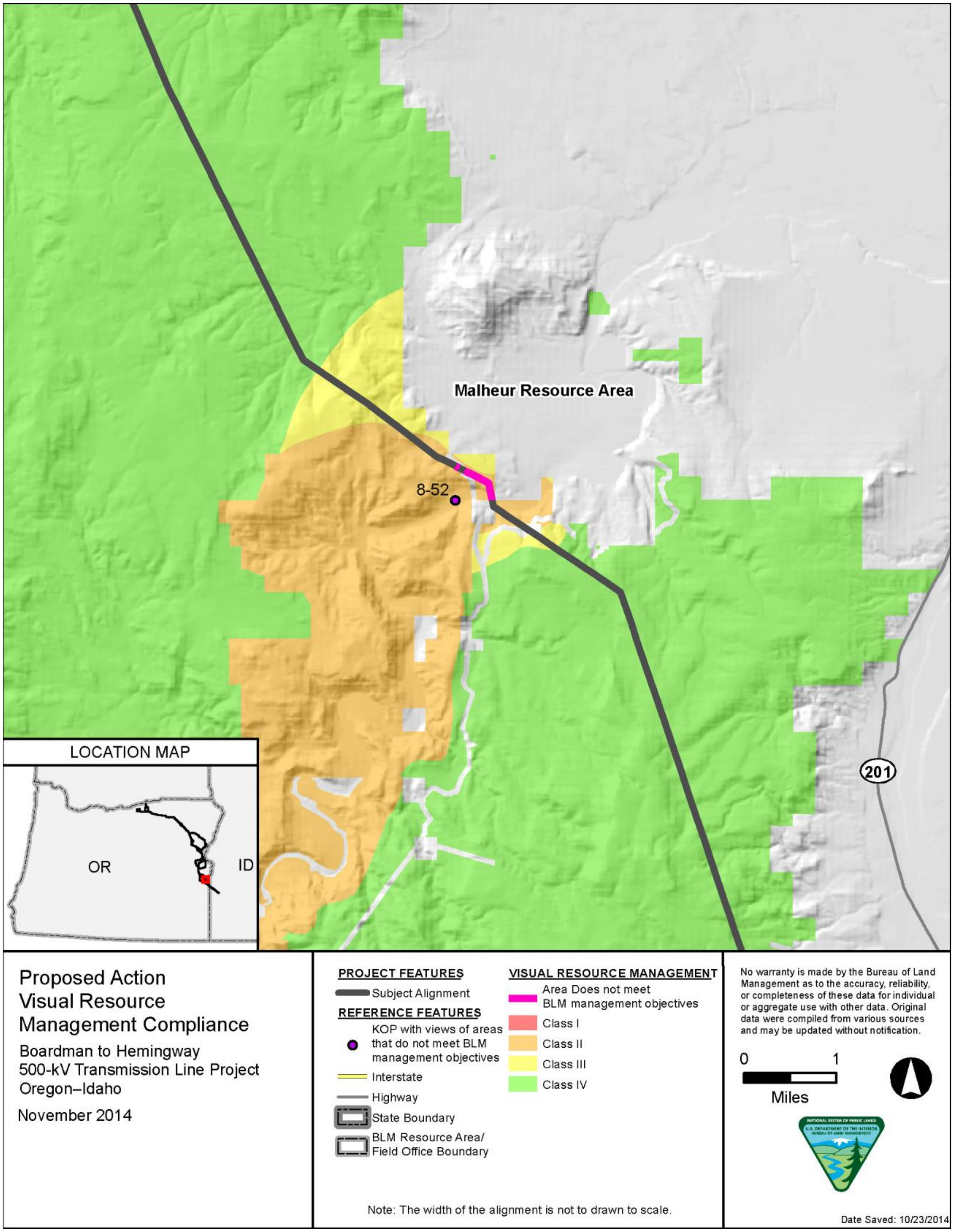


Figure 3-76. Proposed Action Visual Resource Management Compliance

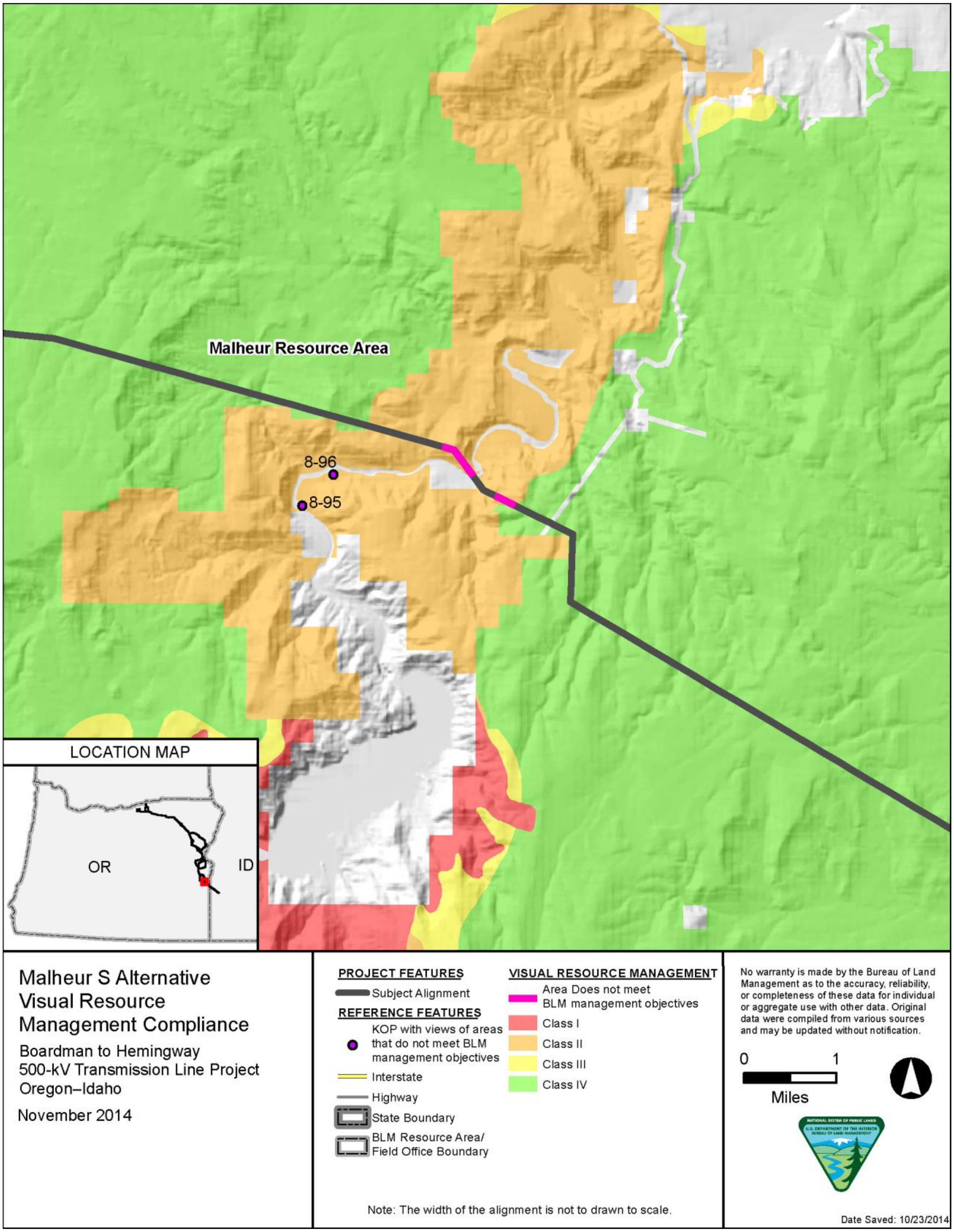


Figure 3-77. Malheur S Alternative Visual Resource Management Compliance

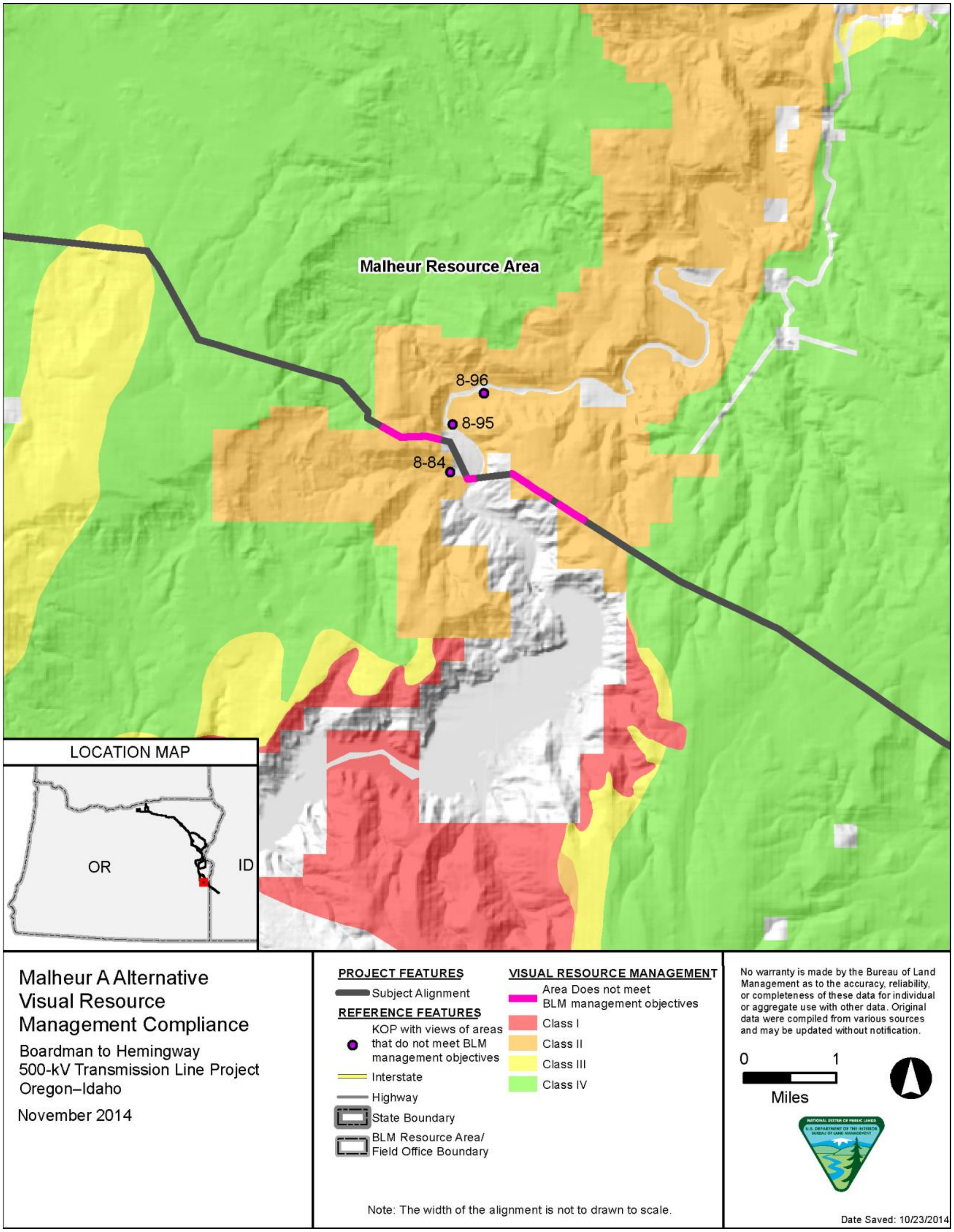


Figure 3-78. Malheur A Alternative Visual Resource Management Compliance

Description of Potential Plan Amendment

Proposed Action

For the Proposed Action the Southeastern Oregon RMP would need to be amended at the Visual Resources section beginning on page 67 to add the following language:

> "The portion of the 250-feet-wide right-of-way for the Boardman to Hemingway Transmission Project within VRM Class II lands in the Owyhee River Below the Dam ACEC located in portions of:
>
> - Township 21S, Range 45E, section 14 from project mileposts 261.1 to 261.2 (approximately 0.1 miles) and from project mileposts 261.3 to 261.7 (approximately 0.4 miles)
>
> would be amended to VRM Class IV (a total of approximately 15 acres) for only those portions of the Project that would still exceed acceptable levels of change within the VRM Class II areas after application of all feasible measures to reduce impacts on visual resources is exhausted."

Tub Mountain South Alternative

For the Tub Mountain South Alternative the Southeastern Oregon RMP would need to be amended at the Visual Resources section beginning on page 67 to add the following language:

> "The portion of the 250-feet-wide right-of-way for the Boardman to Hemingway Transmission Project within VRM Class III lands in the vicinity of the National Historic Oregon Trail ACEC located in portions of:
>
> - Township 15S, Range 45E, Section 9 from project mileposts 7.3 to 7.5 (approximately 0.2 miles),
> - Township 15S, Range 45E, Sections 16, 21, and 22 from project mileposts 8.0 to 9.3 (approximately 1.3 miles),
> - Township 15S, Range 45E, Section 22 from project mileposts 9.6 to 9.9 (approximately 0.3 miles),
> - Township 15S, Range 45E, Section 27 from project mileposts 10.1 to 10.2 (approximately 0.1 mile), and
> - Township 17S, Range 45E, Sections 18 and 19 from project mileposts 22.3 to 23.2 (approximately 0.9 miles)
>
> would be amended to VRM Class IV (a total of approximately 112 acres) for only those portions of the Project that would still exceed acceptable levels of change within the VRM

Class III areas after application of all feasible measures to reduce impacts on visual resources is exhausted."

MALHEUR S ALTERNATIVE

For the Malheur S Alternative the Southeastern Oregon RMP would need to be amended at the Visual Resources section beginning on page 67 to add the following language:

"The portion of the 250-feet-wide right-of-way for the Boardman to Hemingway Transmission Project within VRM Class II lands in the Owyhee River Below the Dam ACEC located in portions of:

- Township 22S, Range 45E, Section 9 from project mileposts 23.4 to 23.9 (approximately 0.5 miles) and from project mileposts 24.2 to 24.4 (approximately 0.4 miles)

would be amended to VRM Class IV (a total of approximately 23 acres) for only those portions of the Project that would still exceed acceptable levels of change within the VRM Class II areas after application of all feasible measures to reduce impacts on visual resources is exhausted."

MALHEUR A ALTERNATIVE

For the Malheur A Alternative the Southeastern Oregon RMP would need to be amended at the Visual Resources section beginning on page 67 to add the following language:

"The portion of the 250-feet-wide right-of-way for the Boardman to Hemingway Transmission Project within VRM Class II lands in the Owyhee River Below the Dam ACEC located in portions of:

- Township 22S, Range 44E, Section 12 and Township 22S, Range 45E, Section 7 from project mileposts 21.8 to 22.5 (approximately 0.7 miles)
- Township 22S, Range 45E, Section 18 from project mileposts 23.0 to 23.1 (approximately 0.1 mile)
- Township 22S, Range 45E, Section 17 from project mileposts 23.5 to 24.0 (approximately 0.5 miles)
- Township 22S, Range 45E, Section 16 and 17 from project mileposts 24.1 to 24.5 (approximately 0.4 miles)

would be amended to VRM Class IV (a total of approximately 79 acres) for only those portions of the Project that would still exceed acceptable levels of change within the VRM Class II areas after application of all feasible measures to reduce impacts on visual resources is exhausted."

EFFECTS

In areas where the visual resources classification is changed from Class II or III to Class IV, an amendment would result in the area being managed at a lower protection level.

PROPOSED ACTION

Amending the land-use plan would result in the following change 15 fewer acres of VRM II (currently 144,403 acres) and 15 more VRM Class IV (currently 1,365,457 acres).

The following components of the VRI are located within the Project area boundary: Scenic Quality Rating Units: 15 acres of Class B lands; Sensitivity Level Rating Units: 4 acres of high sensitivity lands and 11 acres of medium sensitivity lands; Distance Zones: 15 acres in the foreground-middleground distance zone; VRI Class: 4 acres of VRI Class II lands and 11 acres of VRI Class III.

Amending a portion of the VRM Class designation from VRM Class II to VRM Class IV would allow changes to the characteristic landscape to increase from needing to retain landscape character to accept instead, major modification of the landscape character. Management activities that under the existing VRM Class could attract attention but not dominate the view would be allowed to dominate the view and be a major focus of viewer attention. The change of current planning direction would result in, but not be limited to, the allowance of the Project.

TUB MOUNTAIN SOUTH ALTERNATIVE

Amending the land-use plan would result in the following change 112 fewer acres of VRM III (currently 199,078 acres) and 112 more VRM Class IV (currently 1,365,457acres).

The following components of the VRI are located within the Project area boundary: Scenic Quality Rating Units: 112 acres of Class C lands; Sensitivity Level Rating Units: 46 acres of medium sensitivity lands and 66 acres of low sensitivity lands; Distance Zones: 106 acres in the foreground-middleground distance zone and 6 acres in the seldom seen distance zone; VRI Class: 112 acres of VRI Class IV lands.

Amending a portion of the VRM Class designation from VRM Class III to VRM Class IV would allow changes to the characteristic landscape to increase from needing to partially retain landscape character to accept instead, major modification of the landscape character. Management activities that under the existing VRM Class could attract attention but not dominate the view would be allowed to dominate the view and be a major focus of viewer attention. The change of current planning direction would result in, but not be limited to, the allowance of the Project.

MALHEUR S ALTERNATIVE

Amending the land-use plan would result in the following change 23 fewer acres of VRM II (currently 144,078 acres) and 23 more VRM Class IV (currently 1,365,457 acres).

The following components of the VRI are located within the Project area boundary: Scenic Quality Rating Units: 23 acres of Class A lands; Sensitivity Level Rating Units: 23 acres of high sensitivity lands; Distance Zones: 23 acres in the foreground-middleground distance zone; VRI Class: 23 acres of VRI Class II lands.

Amending a portion of the VRM Class designation from VRM Class II to VRM Class IV would allow changes to the characteristic landscape to increase from needing to retain landscape character to accept instead, major modification of the landscape character. Management activities that under the existing VRM Class could attract attention but not dominate the view would be allowed to dominate the view and be a major focus of viewer attention. The change of current planning direction would result in, but not be limited to, the allowance of the Project.

Malheur A Alternative

Amending the land-use plan would result in the following change 79 fewer acres of VRM II (currently 144,403 acres) and 79 more VRM Class IV (currently 1,365,457 acres).

The following components of the VRI are located within the Project area boundary: Scenic Quality Rating Units: 54 acres of Class A lands and 25 acres of Class B lands; Sensitivity Level Rating Units: 79 acres of high sensitivity lands; Distance Zones: 79 acres in the foreground-middleground distance zone; VRI Class: 79 acres of VRI Class II lands.

Amending a portion of the VRM Class designation from VRM Class II to VRM Class IV would allow changes to the characteristic landscape to increase from needing to retain landscape character to accept instead, major modification of the landscape character. Management activities that under the existing VRM Class could attract attention but not dominate the view would be allowed to dominate the view and be a major focus of viewer attention. The change of current planning direction would result in, but not be limited to, the allowance of the Project.

3.4.2.3 Wallowa-Whitman National Forest Land and Resource Management Plan

The 1990 Wallowa-Whitman National Forest LRMP was prepared, analyzed and approved under the agency's original planning rule established in 1982. The agency's current planning rule was published in the *Federal Register* in April 2012 (77 FR 21162; USFS 2012) and updates Part 219 of Title 36 of the Code of Federal Regulations. The 2012 planning rule allows for a transition period through June 2015, during which forest plan amendments can be reviewed and approved under the old or new rule. The responsible official has the discretion to determine whether and how to amend the LRMP. Under either planning rule, amendment of the LRMP would require a decision signed by the USFS Supervisor.

Given that the anticipated date for the B2H final decision coincides with the end of the transition period to the 2012 planning rule, the USFS responsible official for the B2H Project recommends that the need for potential amendments related to the project be assessed following the provisions of the 2012 Rule. This will ensure that possible amendments are properly analyzed (i.e., the appropriate planning rule is followed) even if the project decision were to be delayed beyond June 2015.

The site-specific information necessary to evaluate the need for LRMP amendments with certainty is not yet available. Therefore, the evaluation of forest plan consistency and discussion of needed amendments is based on assumptions developed from available information for the Proposed Action and the Timber Canyon Alternative. A final evaluation of compliance will be made prior to completion of the Final EIS for the B2H Project. Until additional site-specific details are available, especially pertaining to the final locations of access roads and lands used during construction (such as fly-away zones, storage areas and fueling areas), the assumptions stated will be used to determine compliance with the LRMP and the potential need for an amendment.

Every project and activity must be evaluated for consistency with applicable plan components, following direction at 36 CFR 219.15. A project or activity approval document (in this case, the EIS and the ROD to be signed by the Forest Supervisor) must describe how the project or activity is consistent (36 CFR 219.15(a)). Compliance with applicable forest-wide plan standards and with specific management allocations must be reviewed. The 1990 LRMP includes only “standards and guidelines” which are interpreted to be standards (36 CFR 219.15(d)). If a proposed project or activity would not be consistent with the plan, the following adjustments must be considered to resolve the inconsistency: 1) the Proposed Action must be changed and/or mitigated so as to comply with all applicable plan components, 2) the activity may not be approved, or 3) a plan amendment is required to add, modify, or remove one or more plan components. Plans may be amended at the same time with the approval of the project or activity so that it will be consistent with the plan as amended (36 CFR 219.15(c)(4)).

MANAGEMENT AREA ALLOCATION

PROPOSED ACTION

The Proposed Action would cross USFS lands administered by the Wallowa-Whitman National Forest for approximately 5.9 miles in Segment 2. This segment of the Proposed Action, over the Blue Mountains, lies within a utility corridor designated in the Wallowa-Whitman LRMP. The corridor is allocated to MA 17 - Power Transportation Facility Retention. It contains an existing electrical transmission line. Approximately 110 acres of USFS lands are included within the 250-foot right-of-way, access roads and ancillary facilities, all within MA-17. Maps of the Proposed Action and alternatives showing conformance with USFS VQO classifications are located in Appendix B.7.

The proposed project is appropriate given this allocation.

TIMBER CANYON ALTERNATIVE

The Timber Canyon Alternative would not conform with USFS plan direction for the current applicable MA. Because of the level of non-conformance, if the Timber Canyon Alternative were selected, the USFS would reallocate the affected 344 acres to MA-17 – Power Transportation Facility Retention to facilitate construction of the project. This reallocation of 5 MAs would represent a reduction in the forest-wide acres to less than one percent. The direction for management of MA 17 (described above) would apply to these 344 acres for the duration of the authorization for the project.

Visual Resource Management

USDA Agriculture Handbook 478 describes visual quality objectives (VQO) for the management of USFS lands. VQO designations are based on a 1991 visual resource inventory; outcomes of the inventory are reflected in GIS coverages. The VQO designations applied to USFS lands are the following:

- Preservation - allows only natural ecological changes
- Retention - allows management activities which are not visually evident
- Partial Retention - allows management activities which are visually subordinate to the characteristic visual landscape.
- Modification - allows management activities that may visually dominate the original characteristic visual landscape, but when vegetation and land forms are altered, which must use the form, line, color, texture and/or scale of that landscape for its visual characteristics.
- Maximum Modification - allows vegetation and land form altering management activities that dominate the characteristic visual landscape in the foreground and middleground but which have the same visual characteristics as the surrounding area when seen as background.

Proposed Action

The VQO designation along the I-84 corridor and within MA 17 is identified as Partial Retention. The current LRMP direction, with regard to Partial Retention objectives provides:

- Page 4-43: Partial Retention Foreground and Retention Middleground - In partial retention foreground and retention middleground, the area regenerated per decade should not exceed 9percent or be less than 5percent of the suitable forest land within any viewshed. The maximum seen area disturbed at any one time should not exceed 14percent of any viewshed. Limit regeneration unit size to that which meets partial retention and desired character including consideration of future entries and regrowth. The approximate range of sizes to accomplish this is ½ to 2 acres in the immediate foreground (less than 500 feet) and 3 to 5 acres in the foreground greater than 500 feet from the road or trail. Target size tree in foreground is 26 inches where biologically feasible.
- Page 4-44: Partial Retention Middleground - In partial retention middlegrounds, the area regenerated per decade should range between 8 and 10 percent. Limit maximum regeneration unit size to 10 acres. Maximum area disturbed at any one time should not exceed 20percent.

Purpose and Need to Amend the USFS Wallowa-Whitman National Forest LRMP

The proposed transmission line would not comply with the Partial Retention VQO, as shown in Figure 3-79. Assuming that final engineering and design of Proposed Action facilities are not able to meet Partial Retention management objectives, an amendment to the Wallowa-Whitman LRMP would be needed to change the VQO classification to Modification to accommodate the transmission line and other related activities, at least where any facilities or long-term impacts are visible from I-84.

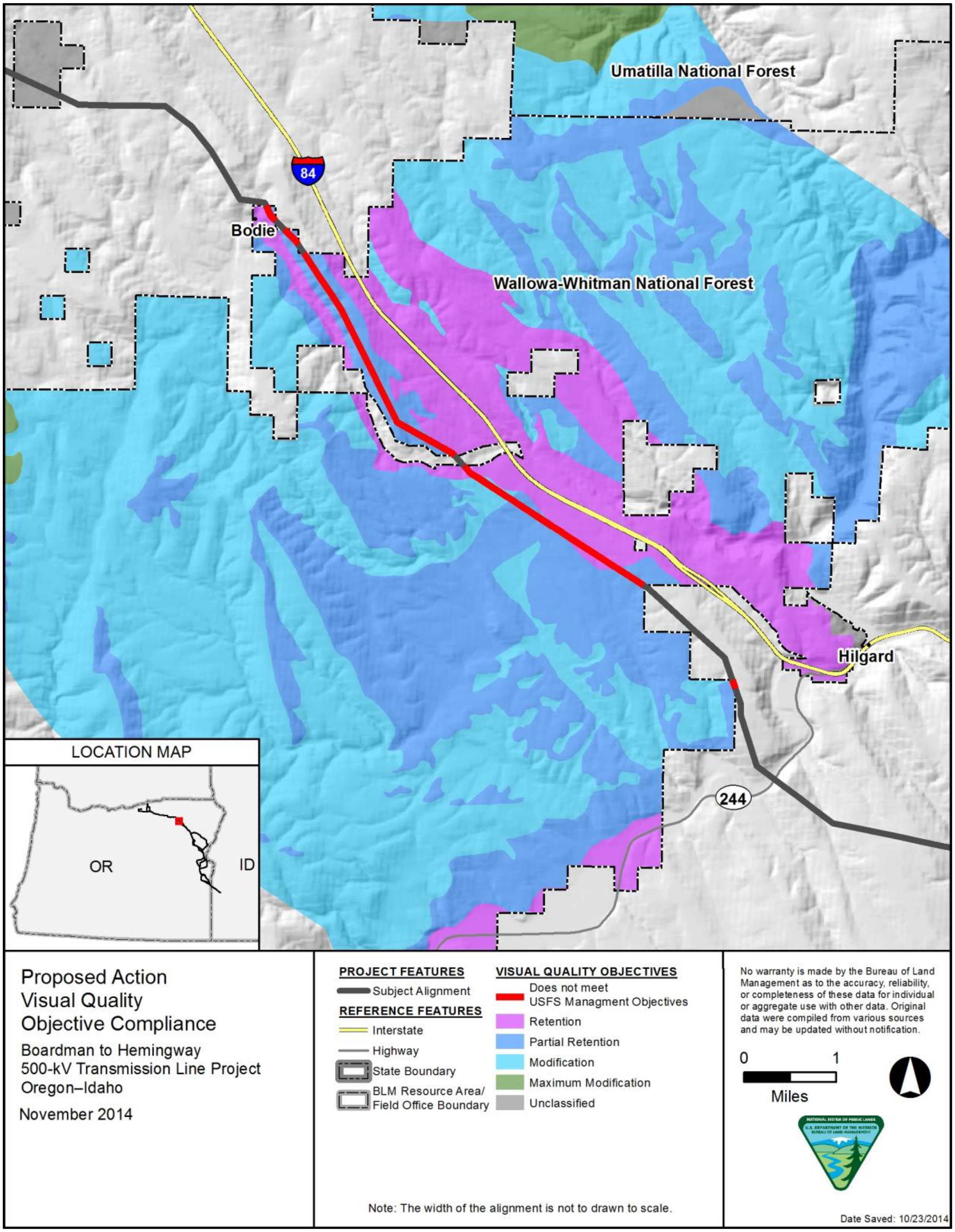


Figure 3-79. Proposed Action Visual Quality Objective Compliance

Description of Potential Plan Amendment

For the purposes of constructing, operating, and maintaining the B2H transmission line; the VQO for 110 acres located within the Proposed Action right-of-way would be re-designated from Partial Retention to Modification.

Effects

Re-designation of the VQO from Partial Retention to Modification would allow for more visually intrusive projects to be located in the redesignated 110 acres.

Timber Canyon Alternative

The Timber Canyon Alternative would cross USFS for approximately 19.6 miles. Approximately 344 acres of USFS lands would be affected by the proposed 250-foot right-of-way, access roads and ancillary facilities. These lands are currently allocated to five MAs:

- MA 1 – Timber Production Emphasis (LRMP pages 4-56 to 60) - 139 acres
- MA 3 – Wildlife/Timber (LRMP pages 4-60 to 63) - 139 acres
- MA 15 – Old-Growth Preservation (LRMP pages 4-89 to 4-91) - less than1 acre
- MA 16 – Administrative and Recreation Site Retention (LRMP pages 4-91 to 4-93) – less than 1 acre
- MA 1w – (LRMP ROD page 10) - 65 acres

Much of the Timber Canyon Alternative crosses VQO Partial Retention and Modification areas in visual assessment unit BA-013. The Timber Canyon Alternative project facilities would not be in compliance with these current visual quality objectives. If the Timber Canyon Alternative were selected, the responsible official has recommended assessment of a LRMP amendment to reallocate the right-of-way for this project to MA 17. A final evaluation of compliance will need to be made prior to completion of the Final EIS for the B2H Project.

Purpose and Need to Amend the USFS Wallowa-Whitman National Forest LRMP

The VQO designation for MA 17 is identified as Partial Retention. The Timber Canyon Alternative would not conform to either the existing VQO designations in the existing five MAs or to the Partial Retention designation for MA 17 if that reallocation were approved, as shown in Figure 3-80 and Figure 3-81. The proposed transmission line would not comply with this VQO and a project-specific plan amendment to the LRMP would be needed to approve the Timber Canyon Alternative.

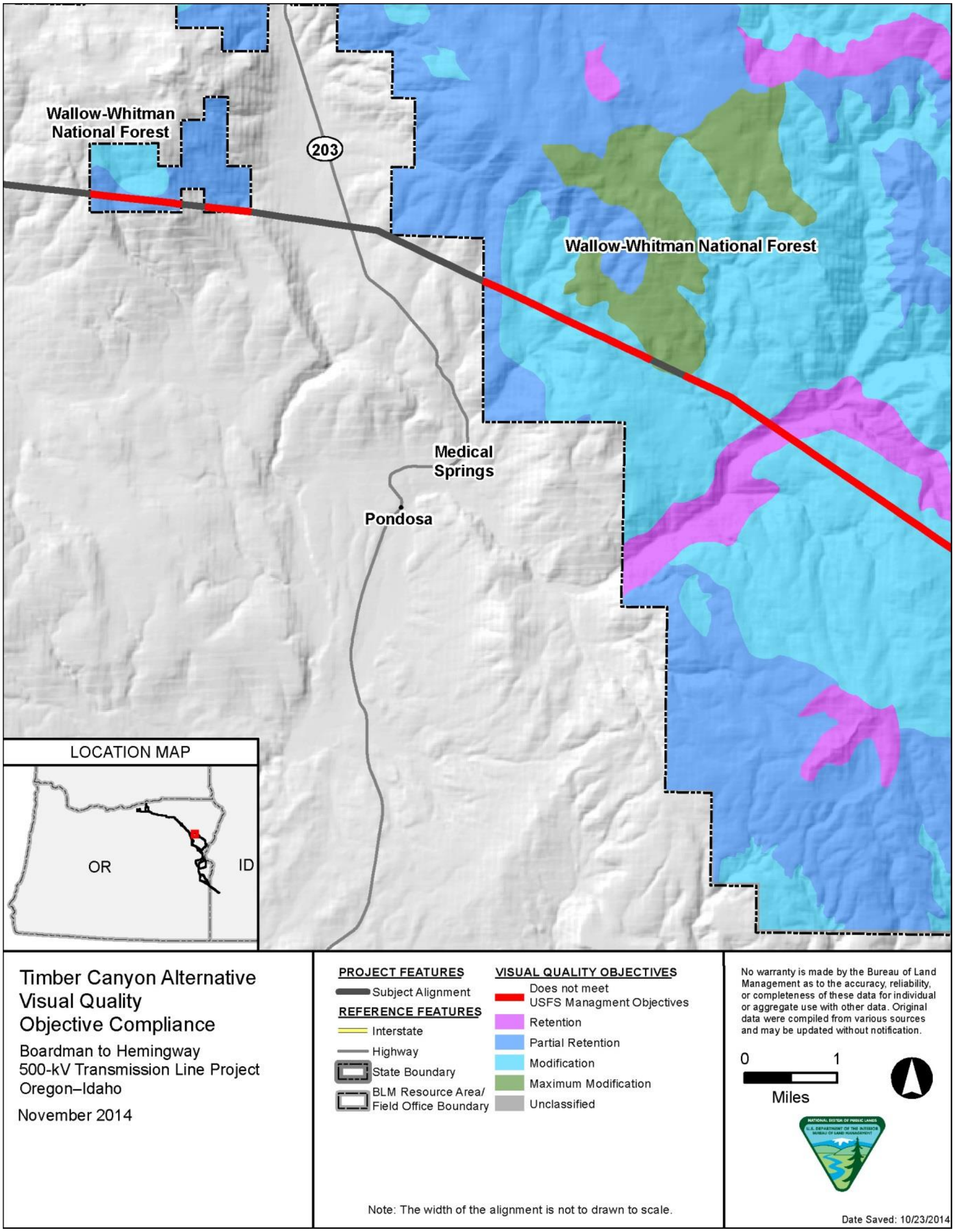


Figure 3-80. Timber Canyon Alternative Visual Quality Objective Compliance

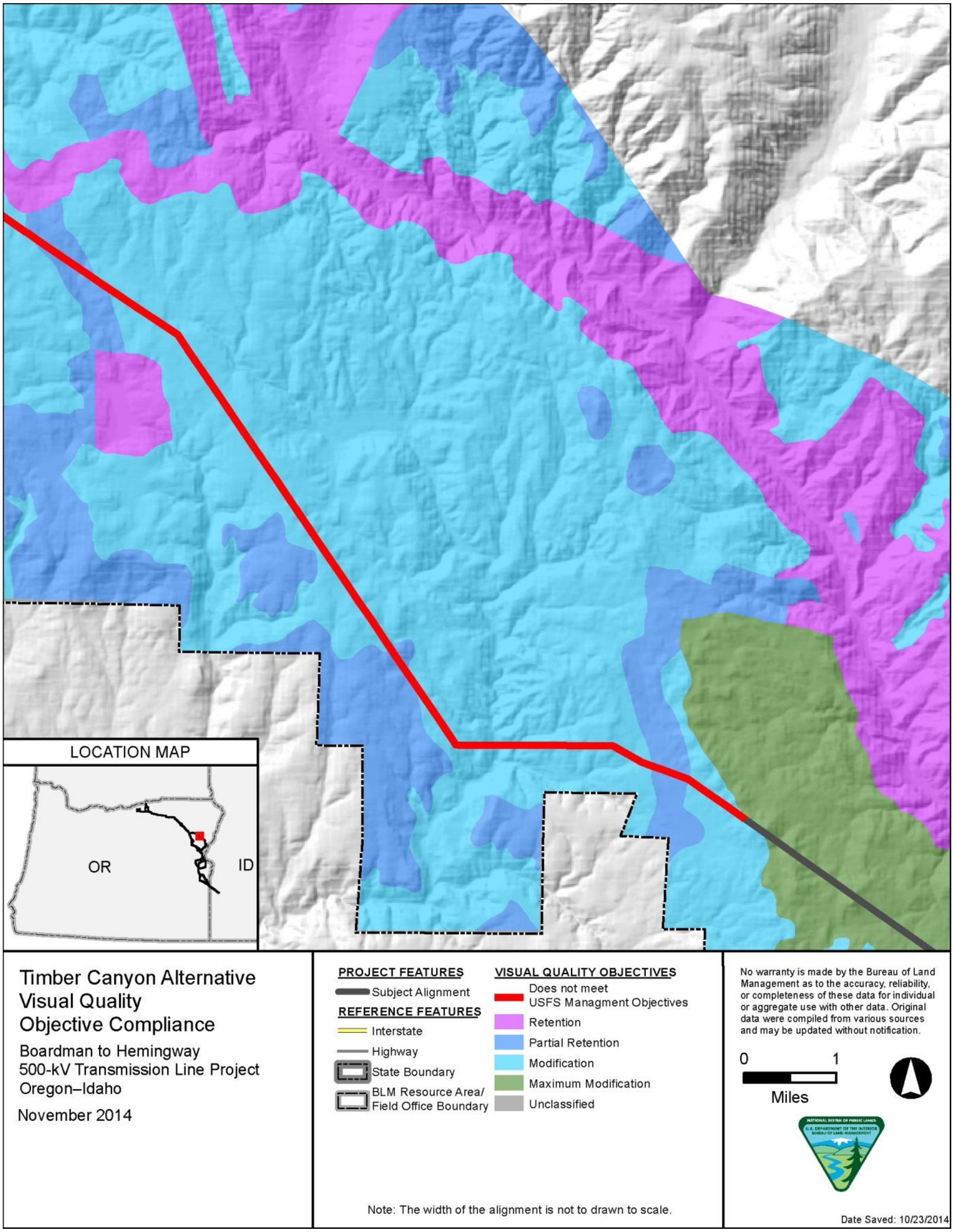


Figure 3-81. Timber Canyon Alternative Visual Quality Objective Compliance

Description of Potential Plan Amendment

The 344 acres of National Forest System Lands that would be within the disturbance footprint of the 250-foot right-of-way, access roads and ancillary facilities would be reallocated from the five current MAs designations to MA 17. For the purposes of constructing, operating, and maintaining the B2H transmission line, the VQO for the 344 acres of reallocated MA 17 would be re-classified from Partial Retention to Maximum Modification.

Effects

Reallocation of the existing Management Areas to MA 17 and re-designation of the applicable VQO from current designations to Maximum Modification would not allow for additional transmission line projects to be located on USFS lands. The effects of reallocation of lands to MAs is discussed in Section 3.2.6, Land Use and Agriculture.

Eastside Screens

In 1995, a Decision Notice for the “Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales” amended nine forest plans in Region 6, including the Wallowa-Whitman. This is referred to as Regional Forester’s Amendment #2 (RF-2), and the direction is commonly known as “Eastside Screens.” The direction applies to the design and preparation of all timber sales on eastside forests, except personal use firewood sales, post and poles sales, sales to protect health and safety, and sales to modify vegetation within recreation special use areas.

There are two potential scenarios for application of the standards in Eastside Screens, referred to as Scenarios A and B. Screens stipulates that patterns of timber stand structure within proposed timber sales and associated watersheds be characterized and compared to the historic range of variability, and the appropriate scenario (A or B) is determined based upon whether or not the amount and type of late and old structure (LOS) falls below historic range of variability. Planning must then follow the set of standards for the appropriate scenario.

The Eastside Screens focuses on potential impacts of timber sales on riparian habitat, historical vegetation patterns and wildlife habitat connectivity. It requires the analysis of historic range of variability and prohibits the cutting of trees with a 21 inch diameter at breast height (dbh) and larger.

The Wallowa-Whitman LRMP, including specific direction for MA 17 and the details of RF-2, indicates that project-related timber removal would be subject to Eastside Screens direction, with a single exception related to snags (LRMP page 4-45, 7b). Direction for MA 17 indicates the intent to actively manage timber resources so as to contribute to the regulated timber harvest and to the allowable sale quantity. Removal of timber by the applicant or any party working in their behalf would be considered sale of timber and therefore subject to the requirements of Eastside Screens. Additionally, none of the exempted timber sale types are expected to apply to the B2H Project.

PROPOSED ACTION

While most guidance in RF-2 (Eastside Screens) would be met by the Proposed Action, non-conformance with a prohibition on harvest of large trees and requirements to move timber stand structure toward late and old structure would require project-specific LRMP amendments for the Proposed Action. All of the applicable standards are wildlife standards applicable to watersheds with existing conditions for late and old structure stands below the historic range of variability; this situation is identified as Scenario A in the Eastside Screens. Review of historic range of variability analyses performed for other projects in watersheds intersected by the Proposed Action confirms that Scenario A represents the existing condition, i.e. late and old structure in some biophysical environments falls below historic range of variability.

The Eastside Screens direction of the current LRMP provide for three management standards:

- Maintain all remnant late and old seral and/or structural live trees greater than 21 inch dbh that currently exist within stands proposed for harvest activities;
- Manipulate vegetative structure that does not meet late and old conditions in a manner that moves it towards these conditions as appropriate to meet historic range of variability;
- Maintain open, park-like stand conditions where this condition occurred historically. Manipulate vegetation in a manner to encourage the development and maintenance of large diameter, open canopy structure.

All trees within the right-of-way would need to be cut, with only minor exceptions (for example, where the line spans a draw and is adequately elevated above the trees). Data for stands in the analysis area for the Proposed Action show less than one acre of late and old stands would be affected and there is a potential need to remove trees 21inch dbh and larger in forested stands to accommodate construction of the project facilities and access roads and provide required clearance beneath the transmission line. In this event, the harvest of large trees could not be avoided and manipulation of vegetative structure to move it toward historic range of variability could not be accomplished. A project-specific LRMP amendment to allow the harvest would be required in order to authorize the Proposed Action.

PURPOSE AND NEED TO AMEND THE USFS WALLOWA-WHITMAN NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

The Proposed Action would not meet the standards and the Eastside Screens direction of the LRMP would need to be amended to generally provide:

- Authorization to harvest remnant late and old seral and/or structural live trees greater than 21inch dbh the duration of the authorization;
- Authorization to manipulate vegetative structure that does not meet LOS in a manner that does not move it towards LOS for the duration of the authorization;
- Authorization to manipulate vegetation in a manner that does not maintain open, park-like stand conditions, and does not encourage the development and maintenance of large diameter, open canopy structure for the duration of the authorization.

Description of Potential Plan Amendment

Interim Wildlife Standard Scenario A – No Net Loss of LOS

Patterns of stand structure by biophysical group, compared to the HRV within the Proposed Action right-of-way and associated watersheds for the Proposed Action fit Scenario A. One or both LOS stages fall below HRV. Under Scenario A there should be no net loss of LOS from that biophysical environment. However, implementation of the project would require removal of all trees from an estimated 0.8 acres of LOS, resulting in a small loss of LOS acres.

The current LRMP direction provides:

> Scenario A – If either ONE or BOTH of the LOS stages FALLS BELOW HRV in a particular biophysical environment, there should be NO NET LOSS of LOS from that biophysical environment. DO NOT ALLOW timber sale harvest activities to occur within LOS stages that are BELOW HRV.

The LRMP direction would need to be amended to provide:

> Scenario A – Allow timber sale harvest activities to occur within LOS stages such that a net loss of LOS will occur, to accommodate construction of the transmission line facilities, access roads, and to provide required clearance underneath the line during construction and as required for operation and maintenance for the duration of the authorization.

Interim Wildlife Standard – Treatment outside of LOS – Maintain Large Trees

There are two potential scenarios for application of the wildlife standard (referred to as Scenarios A & B), but both require that live large trees (equal to or larger than 21inch dbh) be maintained within stands proposed for harvest. Based upon review of data for stands intersected by the right-of-way for the Proposed Action, it is anticipated that trees 21inch dbh and larger would need to be removed to accommodate construction of the transmission line facilities and access roads and to provide required clearance beneath the line. A plan amendment would be necessary for harvest of trees 21inches dbh and greater.

The current LRMP direction provides:

> 2a) Maintain all remnant late and old seral and/or structural live trees greater than 21 inch dbh that currently exist within stands proposed for harvest activities.

The LRMP direction would need to be amended to provide:

> 2a) Remnant late and old seral and/or structural live trees greater than 21 inch dbh within the B2H transmission right-of-way corridor may be removed to accommodate construction of the transmission line facilities, access roads, and to provide required clearance beneath the line during construction and as required for operation and maintenance for the duration of the authorization.

Interim Wildlife Standards – Treatment outside of LOS – Move Structure toward LOS and Maintain Open, Park-Like Stand Conditions

Review of the Revised POD indicates that all trees beneath the line would need to be cut, with only minor exceptions (for example, where the line spans a draw and is adequately elevated above the trees). Moving the stand structure toward LOS would not occur and a project-specific plan amendment would be needed. The current LRMP direction provides:

> 2b) Manipulate vegetative structure that does not meet late and old structural (LOS) conditions in a manner that moves it towards these conditions as appropriate to meet HRV.
>
> 2c) Maintain open, parklike stand conditions where this condition occurred historically. Manipulate vegetation in a manner to encourage the development and maintenance of large diameter, open canopy structure. (While understory removal is allowed, some amount of seedlings, saplings, and poles need to be maintained for the development of future stands).

The LRMP direction would need to be amended to provide:

> 2b) Vegetative structures within the transmission right-of-way corridors in MA17 only, will not be manipulated to move it toward LOS conditions in order to accommodate construction of the transmission line facilities, access roads, and to provide required clearance underneath the line.
>
> 2c) Vegetation within the transmission right-of-way corridors in MA17 only, will be managed to accommodate construction of the transmission line facilities, access roads, and to provide required clearance underneath the line. With a few exceptions vegetation within these corridors will not encourage the development and maintenance of large diameter, open canopy structure.

Effects

The effects of amending the Eastside Screens direction of the Wallowa-Whitman LRMP would include the potential for removal of trees larger than 21inch dbh that would not otherwise be removed with the resulting effects to forest habitat within the 110 acres located in the Proposed Action right-of-way and ancillary facilities footprints. More detail on the effects of amending the Eastside Screens direction is provided in Section 3.2.6.

Timber Canyon Alternative

While most guidance in RF #2 (Eastside Screens) would be met by the Timber Canyon Alternative, non-conformance with a prohibition on harvest of large trees and requirements to move timber stand structure toward late and old structure (LOS) would require project-specific LRMP amendments for the Alternative. All of the applicable standards are wildlife standards applicable to watersheds with existing conditions for late and old structure stands (LOS) below the historic range of variability (HRV); this situation is identified as Scenario A in the Eastside Screens. Review of HRV analyses performed for other projects in watersheds intersected by the Timber Canyon Alternative confirms that Scenario A represents the existing condition, i.e. LOS in some biophysical environments falls below HRV.

The Eastside screens direction of the current LRMP provides:

- Maintain all remnant late and old seral (LOS) and/or structural live trees greater than 21 dbh that currently exist within stands proposed for harvest activities;
- Manipulate vegetative structure that does not meet LOS conditions in a manner that moves it towards these conditions as appropriate to meet HRV;
- Maintain open, park-like stand conditions where this condition occurred historically. Manipulate vegetation in a manner to encourage the development and maintenance of large diameter, open canopy structure.

All trees in the right-of-way would need to be removed, with only minor exceptions (for example, where the line spans a draw and is adequately elevated above the trees). Based upon review of data for stands intersected by the ROW, access roads and ancillary facilities for this route show an estimated 75 acres of LOS would be affected and that trees 21inch dbh and larger would need to be removed to accommodate construction of the transmission line facilities and access roads and to provide required clearance beneath the line.

Purpose and Need to Amend the USFS Wallowa-Whitman National Forest Land and Resource Management Plan

The Timber Canyon Alternative would not meet the Eastside Screens standards and B2H Project-specific plan amendments to the LRMP would be necessary in order to authorize the Timber Canyon Alternative. The Eastside Screens direction of the LRMP would need to be amended for the 344 acres of National Forest System lands affected by the Timber Canyon Alternative to generally provide:

- Authorization to harvest remnant late and old seral and/or structural live trees greater than 21inch dbh the duration of the authorization;
- Authorization to manipulate vegetative structure that does not meet LOS in a manner that does not move it towards LOS for the duration of the authorization;
- Authorization to manipulate vegetation in a manner that does not maintain open, park-like stand conditions, and does not encourage the development and maintenance of large diameter, open canopy structure for the duration of the authorization.

Description of Potential Plan Amendment

Wildlife standards Scenario A – treatment within LOS

Current LRMP Direction:

> Scenario A – If either ONE or BOTH of the LOS stages FALLS BELOW HRV in a particular biophysical environment, there should be NO NET LOSS of LOS from that biophysical

environment. DO NOT ALLOW timber sale harvest activities to occur within LOS stages that re BELOW HRV.

Amended LRMP Direction:

Scenario A – For purposes of constructing, operating and maintaining the Boardman to Hemingway Transmission Line, allow timber sale harvest activities to occur within LOS stages such that a net loss of LOS will occur for the duration of the authorization.

Wildlife standards Scenario A – treatment outside LOS (#2 a, b, c)

Current LRMP Direction:

2a) Maintain all remnant late and old seral (LOS) and/or structural live trees > 21inch dbh that currently exist within stands proposed for harvest activities;

2b) Manipulate vegetative structure that does not meet LOS conditions, in a manner that moves it towards these conditions as appropriate to meet HRV;

2c) Maintain open, park-like stand conditions where this condition occurred historically. Manipulate vegetation in a manner to encourage the development and maintenance of large diameter, open canopy structure.

Amended LRMP Direction:

2a) For purposes of constructing, operating and maintaining the Boardman to Hemingway Transmission Line, remnant late and old seral and/or structural live trees > 21inch dbh may be removed for the duration of the authorization;

2b) For purposes of constructing, operating and maintaining the Boardman to Hemingway Transmission Line, vegetative structure that does not meet LOS may be manipulated in in a manner that does not move it towards LOS for the duration of the authorization;

2c) For purposes of constructing, operating and maintaining the Boardman to Hemingway Transmission Line, open, park-like stand conditions need not be maintained. Vegetation may be manipulated in a manner that does not encourage the development and maintenance of large diameter, open canopy structure for the duration of the authorization.

Effects

If an LRMP amendment is deemed to be warranted, management direction for the 250-foot right-of-way, access roads and ancillary facilities for the Timber Canyon Alternative (344 acres) would be changed from Management Areas 1, 1w, 3, 15 and 16 to Management Area 17 (Power Transportation Facility Retention). This area would not be available for future development to transport gas, oil, or electricity.

The effects of amending the Eastside Screens direction of the Wallowa-Whitman LRMP would include the potential for removal of trees larger than 21inch dbh that would not otherwise be removed with the resulting effects to forest habitat within the 344 acres located in the Timber Canyon Alternative right-of-way and ancillary facilities footprints.

3.4.3 Summary of Effects

3.4.3.1 BLM Resource Management Plans

For the Proposed Action, the Baker RMP would need to be amended to reclassify approximately 70 acres of VRM Class III to VRM Class IV, which represents reclassification of less than 0.1 percent of the current VRM Class III lands in the Baker RMP planning area. The Southeastern Oregon RMP would also need to be amended for the Proposed Action to reclassify approximately 15 acres from VRM Class II to VRM Class IV, which represents reclassification of 15 acres out of 144,403 acres of VRM Class II in the Malheur Resource Area.

For the alternatives, the Southeastern Oregon RMP would need to be amended to reclassify approximately 112 acres of VRM Class III to VRM Class IV in order to approve the Tub Mountain South Alternative, out of 199,078 acres of VRM Class III in the Malheur Resource Area. The Southeastern Oregon RMP would also need to be amended to reclassify 23 acres or 79 acres of VRM Class II to VRM Class IV to approve either the Malheur S or Malheur A Alternatives, out of 144,403 acres of current VRM Class II in the Malheur Resource Area.

Although B2H Project and potential future effects to the visual resources at the locations of the amendments would be noticeable, the RMP amendments necessary for approval of the Proposed Action or any of the alternatives would have very low long-term overall effects on the visual resources or visual resource management in either the Baker or Southeastern Oregon RMPs.

3.4.3.2 Wallowa-Whitman Land and Resource Management Plan

In order to authorize the Proposed Action, the Wallowa-Whitman National Forest LRMP would need to be amended to re-designate 110 acres of VQO Partial Retention to VQO Modification. The location of the re-designations would be in an existing utility corridor through the Blue Mountains generally paralleling I-84 and which includes an existing transmission line. Although re-designation could allow for more visually intrusive projects in the area, the existing visual intrusions and the relatively small area of redesignation would make the overall effects to visual resources and visual resource management in the forest long-term but low.

To authorize the Timber Canyon Alternative, the Wallowa-Whitman National Forest LRMP would likely be amended to reallocate approximately 344 acres of National Forest System from five Management Area allocations to Management Area 17 and to re-designate VQO designations of Partial Retention and Modification to Maximum Modification. This would represent a reduction in the forest-wide acres allocated to the five MA allocations of less than 1 percent.

Although the visual effects of the Proposed Action and Timber Canyon Alternative would be noticeable near the areas of the LRMP amendments, the overall effect to visual resources and forest management would be long-term but low.