In cooperation with the Bureau of Land Management

Lane-Wendson No. 1 Transmission Line Rebuild Project

Draft Environmental Assessment

November 2015

DOE/EA-1952

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Acronyms and Abbreviations

°F	degrees Fahrenheit
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
BLM	Bureau of Land Management
BMP	best management practice
BPA	Bonneville Power Administration
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO_2	carbon dioxide
COTR	Contracting Officer's Technical Representative
CZMA	Coastal Zone Management Act
dBA	decibels on the A-weighted scale
dbh	diameter at breast height
DEQ	Oregon Department of Environmental Quality
DOE	U.S. Department of Energy
DOGAMI	Oregon Department of Geology and Mineral Industries
DSL	Oregon Department of State Lands
EA	Environmental Assessment
EFH	essential fish habitat
EIA	U.S. Energy Information Administration
EIS	environmental impact statement
EMF	electric and magnetic fields
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	evolutionary significant unit
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FONSI	Finding of No Significant Impact
FR	Federal Register
G	units of gauss
HFCs	hydrofluorocarbons
HUC	hydrologic unit code

HPA	high probability area
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolt
kV/m	thousands of volts per meter
MBTA	Migratory Bird Treaty Act
mG	thousandths of a gauss
MOU	memorandum of understanding
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&C lands	Oregon and California Railroad Revested Lands
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
ORS	Oregon Revised Statutes
OR 126	Oregon Highway 126
OR 200	Oregon Highway 200
PCP	pentachlorophenol
PFCs	perfluorocarbons
PFO	palustrine forested
PM	particulate matter
PM-10	particulate matter with a diameter of 10 micrometers or less
ppb	parts per billion
ppm	parts per million

PUD	Public Utility District
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
RV	recreational vehicle
SF6	sulfur hexafluoride
SHPO	Oregon State Historic Preservation Office/Officer
TMDL	total maximum daily load
UGB	urban growth boundary
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
V/m	volts per meter

Chapter 1. Purpose of and Need for Action

1.1 Introduction

The Bonneville Power Administration (BPA) is proposing to rebuild its Lane-Wendson No. 1 ***transmission line***, which runs from Eugene to Florence, Oregon (Figure 1-1). The 41.3-mile-long 115-***kilovolt*** *(kV)* line is aging and BPA proposes to replace its wood-pole ***structures*** and other line components and improve the road system that provides access to the transmission line ***right-of-way*** for rebuilding the line and performing ongoing operations and maintenance.

Terms in ***bold italics*** are defined in Chapter 6 Glossary.

This chapter describes the need for the Lane-Wendson Transmission Line Rebuild Project (Rebuild Project). This chapter also identifies the purposes that BPA is attempting to achieve in meeting this need, identifies the cooperating agency involved in the development of this ***Environmental Assessment*** (EA), and summarizes the public scoping process conducted for the EA.

BPA is a federal agency that owns and operates more than 15,000 miles of high-***voltage*** transmission lines. The transmission lines move most of the Northwest's high-voltage power from facilities that generate the power to users throughout the region. BPA has obligations to ensure that its transmission system is, safe, reliable, and has sufficient capability to serve its customers. For example, the Federal Columbia River Transmission System Act directs BPA to construct improvements, additions, and replacements to its transmission system that are necessary to maintain electrical stability and reliability, as well as to provide service to BPA's customers (16 United States Code [USC] § 838b(b-d)).

This EA was prepared pursuant to regulations implementing the National Environmental Policy Act, which requires federal agencies to assess the impacts their actions may have on the environment.

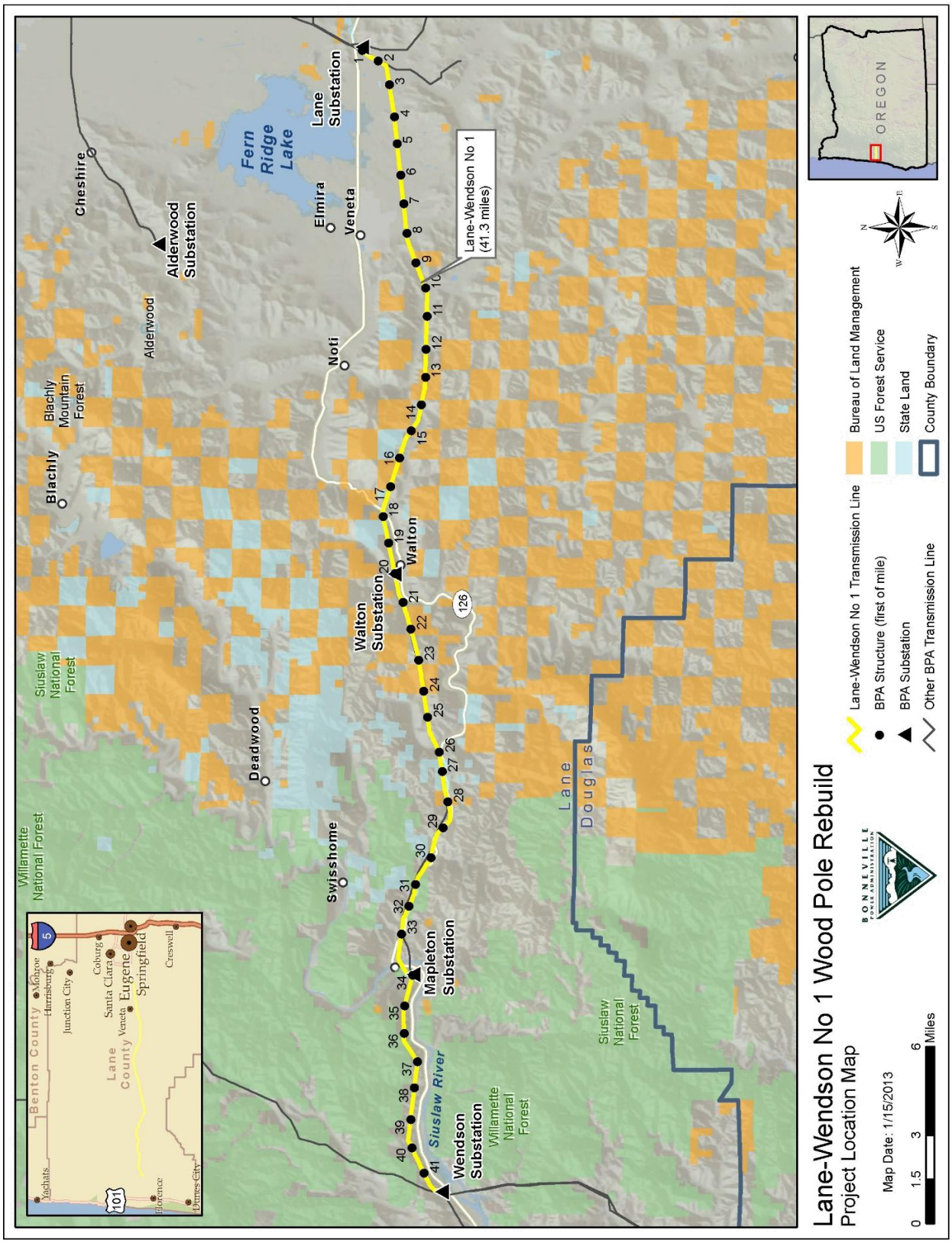

Figure 1-1. Project Vicinity Map

1.2 Need for Action

BPA needs to ensure the integrity and reliability of the Lane-Wendson No. 1 transmission line, which serves BPA's utility customers, who in turn serve communities in western Oregon.

No major rebuild work has been done on the Lane-Wendson No. 1 transmission line since it was originally built in 1948. In general, wood poles for transmission lines are expected to have a service life of 55 to 60 years, at which point they are usually replaced due to age, rot, or other forms of deterioration. Most structures on the Lane-Wendson No. 1 line have reached the end of their service life, are physically worn, and in places are structurally unsound.

Many of the poles are made of Douglas-fir in which the center of the pole was not treated with preservative to prevent rot and decay. Poles of this type and age are now experiencing a high frequency of decay at the ground that makes them more prone to collapse. Collapse of any poles on the line could lead to failure of the line, which presents safety hazards to the public and BPA workers, as well as ***outages*** that would adversely affect power deliveries to BPA's customers in western Oregon.

In addition, the road and trail system that BPA uses to access the transmission line is in poor condition with uneven and eroded travel surfaces, insufficient water control (e.g., failing or lack of culverts or water bars), and overgrown vegetation, making scheduled and emergency repairs unsafe. BPA needs safe, prompt access to each transmission structure for transporting crews, material, and equipment in order to rebuild the line, for ongoing maintenance activities, and for emergency repairs.

1.3 Purposes

The purposes are goals to be achieved while meeting the need for action. BPA has identified the following purposes that would help evaluate the proposed alternatives:

- Maintain or improve transmission ***system reliability*** to BPA and industry standards
- Continue to meet BPA's contractual and statutory obligations
- Minimize environmental impacts
- Demonstrate cost-effectiveness

1.4 Cooperating Agencies

The Council on Environmental Quality's (CEQ) regulations implementing NEPA allow for the designation of other federal, state, and local agencies and Indian Tribes as cooperating agencies for an EA where appropriate (CEQ 1981). Agencies or tribes may be designated as a cooperating agency if they have jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project.

The Bureau of Land Management (BLM) is a cooperating agency for this EA because parts of the transmission line facility and some associated access roads cross BLM lands. BPA's right-of-way

grant for this transmission line and its access roads across BLM land has expired. Therefore, BPA submitted an application (SF-299 form) to BLM to obtain access rights for the reconstruction or improvement of 6.38 miles of existing access roads on BLM lands (Eugene District) for construction of the Rebuild Project. These are existing access roads on which BPA proposes minor road work in order to bring the roads up to useable standards for this project. BLM is authorized by the Federal Land Policy and Management Act (43 U.S.C. 1701 *et seq.*) and its implementing regulations to issue right-of-way grants for facilities and systems, including transmission and distribution systems. Access to the Eugene District is granted under Instructions 44 L.D. 513, rather than a right-of-way grant. The BLM will use this EA to meet its NEPA obligations and to assist in its review of BPA's right-of-way application.

Although other agencies are not identified as cooperating agencies in the development of this EA, if other federal or state agencies have decisions to make relevant to the proposed project, they may use information from the EA to fulfill environmental review obligations. The existing alignment crosses ***intermittent*** and ***perennial streams***, ditches, ponds, and ***wetlands***, some of which are likely waters of the United States and the state. U.S. Army Corps of Engineers (USACE) will likely use relevant information from this EA to help fulfill its NEPA requirements for its actions related to the Proposed Action. In conjunction with delegated state agencies, USACE administers a permit process of Section 404 of the Clean Water Act that controls dredge and fill activities. In Oregon, DSL is the state agency with permitting authority over discharges of dredged or fill materials into waters of the state. BPA is in the process of preparing a joint removal fill permit for this project, which would be reviewed by the USACE and DSL.

1.5 Public Involvement

To help determine issues to be addressed in the EA, BPA conducted public scoping outreach. BPA mailed letters on March 15, 2013, to adjacent landowners, Tribes, government agencies, and other potentially affected or concerned citizens and interest groups. The public letter provided information about the Proposed Action and EA scoping period, requested comments on issues to be addressed in the EA, and described how to comment (mail, fax, telephone, the BPA website, and at scoping meetings). The public letter was posted on a project website established by BPA to provide information about the project and the EA process:

www.bpa.gov/goto/LaneWendson

BPA determined that five Tribes have a potential interest in this project – the Confederated Tribes of Coos; Lower Umpqua and Siuslaw Indians; Coquille Indian Tribe; Cow Creek Band of Umpqua Tribe of Indians; the Confederated Tribes of the Grand Ronde; and the Confederated Tribes of the Siletz. BPA requested information from the Tribes on cultural resources along the transmission line facility and used the information to help shape the cultural resource field investigation.

BPA held two public scoping meetings to describe the project and to solicit comments. Public meetings were held on April 2, 2013, in Florence and April 3, 2013, in Veneta, OR. The public comment period began on March 15, 2013, and BPA accepted comments on the project from the public until April 22, 2013. During these meetings, attendees had the opportunity to learn more

about the EA process and the Proposed Action, and were able to submit EA scoping comments. About 40 people attended these scoping meetings.

BPA considered comments it received during the scoping period in the development of the Draft EA. Eight comments were received during the scoping period. After the scoping period ended, BPA continued to receive comments—these comments continued to influence the environmental review. Comments can be found on the project website.

Comments received during the scoping period were largely focused on requests that BPA continue or initiate coordination activities with landowners along the transmission line to minimize any possible impacts to crops, animals, existing habitat areas (e.g., streams, ponds), and the properties themselves. Questions and comments included the following:

- Concerns about uninvited users (e.g., ATV operators and motorcyclists) and easements rights for BPA's use of property to access the transmission line facility. (Information addressing this comment can be found in Section 3.1.2 under Recreation).
- Requests for more information on various aspects of the Rebuild Project, such as how realignment(s) in areas could lessen potential impacts on wildlife habitat, land use, and vegetation. (Information addressing this comment can be found throughout Chapter 3 under the Proposed Action Environmental Consequences sections.)
- Request to gravel access roads and minimize soil disturbance so as not to spread unwanted vegetation (scot's broom) onto properties. (Information addressing this comment can be found in Sections 2.1.5, 3.2.3, and 3.3.3)
- Request to notify landowners before starting construction so horses and llamas can be moved from work areas. (Information addressing this comment can be found in Sections 3.9.3 and 3.11.3)
- Reminder to meet all water quality measures indicated in the Total Maximum Daily Load (TMDL) Program for Willamette Basin for shade at water crossings and the Proposed Action's need for a 1200-Z permit. (Information addressing this comment can be found in Sections 3.4 and 4.3)
- Requests to discuss potential minimization measures and ***Best Management Practices*** (BMPs) that BPA should consider using during construction. (Information addressing this comment can be found throughout Chapter 3 in the ***Mitigation*** Measures sections.)

Chapter 2. Proposed Action and Alternatives

This chapter describes the Proposed Action (Rebuild Project) and the No Action Alternative, and compares the two Alternatives by the project purposes and potential environmental effects. Figure 1-1 in Chapter 1 shows the location of the Proposed Action.

2.1 Proposed Action

The Proposed Action is to rebuild the existing 41.3 mile-long Lane-Wendson No. 1 115-kV transmission line and to construct and upgrade the access road system and trail system that allows BPA access to and from the transmission line. The project area[1] extends from BPA's Lane ***Substation*** to BPA's Wendson Substation, crossing through Lane County, Oregon, between the cities of Eugene and Florence.

The Proposed Action would involve the following:

- Removal and replacement of all wood-pole transmission line structures (including ***cross arms***, ***insulators***, ***dampers***, and ***guy wires***)
- Replacement of existing ***conductors*** (electric wires) and ***fiber optic cable***
- Replacement of overhead ***ground wire***
- Replacement of five 115-kV ***disconnect switches***
- Improvement of the access road system (including upgrading [improving or reconstructing] existing roads, developing new roads, installing temporary roads, obtaining access rights, and replacing or installing gates)
- Installation of new culverts and bridges, replacement of existing culverts, or repair of existing bridges as part of access road improvements
- Removal of trees and other vegetation along the transmission line right-of-way and access roads
- Establishment of temporary staging areas and ***tensioning sites*** (for pulling and tightening conductors)
- Revegetation of areas disturbed by construction activities

The transmission line would remain in the existing transmission line right-of-way and would continue to be operated at 115-kV. Table 2-1 describes the activities that constitute the Proposed Action. Each of the activities associated with the Proposed Action is described in detail in the remaining portions of this chapter.

[1] This document uses the term project area to collectively refer to the transmission line (including right-of-way on either side of the transmission line) and the access road system.

2.1.1 Rights-of-way and Easements

The project area crosses private property, state-owned land, and BLM and USFS land. BPA has or is in the process of acquiring ***easements*** or other authorizations from underlying landowners for all of the transmission line right-of-way and for most access roads. Most of the line is located in a shared 212.5-foot wide right-of-way with the Lane-Wendson No. 2 line; the Proposed Action does not include reconstruction of the Lane-Wendson No. 2 line. Approximately 9.5 miles of the line is in its own 100-foot wide right-of-way. The rebuilt transmission line would remain in the existing transmission line right-of-way.

On BLM land, BPA's rights to the right-of-way and most roads to access the transmission line expired in 2012. BPA has submitted an *Application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299)* to the BLM (November 14, 2014), requesting that these rights be renewed. The *SF-299* application also includes a request for rights to an additional 0.789 mile of existing roads on BLM land, for a total of 6.38 road miles. The *SF-299* application requests a 20-foot wide easement on these roads. If BPA's application is granted, BPA would continue to use the existing access roads on BLM land in the project area. BPA would make improvements to some of those roads as described in Section 2.1.5 to facilitate access to the transmission line and to access transmission structures for construction and yearly operation and maintenance activities.

Table 2-1. Proposed Action Description

Proposed Description	Quantity	
Transmission Line Elements	**Existing**	**New**
Corridor length	41.3 mi.	41.3 mi.
Corridor right-of-way width	100 ft./212.5 ft.	100 ft./212.5 ft.
Total number of structures	296	291
Number of wood monopole structures	1	1
Number of wood two-pole structures	238	209
Number of wood three-pole structures	56	60
Number of steel monopole structures	1	0
Number of steel two pole structures	0	7
Number of steel three pole three pole structures	0	14
Switch structures	5	5
Structure height range[1]	50-140 ft.	50-140 ft.
Wood-pole structures	50-120 ft.	50-120 ft.
Steel structures	55-140 ft.	55-140 ft.
Operating voltage	115-kV	115-kV
Number of new structures outfitted with guy wires	NA	100
Conductors	3	3
Conductor diameter (2 different types of conductors used)	1.30 in., 0.951 in.	1.30 in., 0.951 in.
Access Road Work Associated with Proposed Action[2]		
Total length of access road activities	70.7 miles	

Proposed Description	Quantity
New Construction	1.0 miles
Reconstruction	12.4 miles
Improvement	41.3 miles
Direction of Travel	15.1 miles
New Trail Construction	0.9 mile
Gates	59
New	11
Repair	6
Replace	42
Bridges	2
New	1
Replace	1
Culverts	78
New	20
Repair	16
Replace	42
Fords	10
Convert (to bridge or culvert)	6
Temporary Bridge	3
Remove	1
Vegetation Removal Associated with Proposed Action	
Removal or disturbance of low-growing vegetation within the transmission line right-of-way	About 135 acres as needed
Removal of trees adjacent to transmission line right-of-way ***(danger trees)***	Estimated as up to 40 (unknown until after construction)
Removal of trees along access roads[1]	1,218 (dispersed across the access road system)
Other tree removal (estimated, for tensioning sites or helicopter pads)	59

1. Rebuilt structures may increase in height by 5 feet to 10 feet for conductor clearance or by 55 feet to 60 feet to accommodate removal of structures 27/4 and 27/5.
2. Existing access road data not available. For details of the differences between the types of access road work discussed, please see Section 2.1.5.

2.1.2 Replacement of Transmission Structures

The transmission line structures are individually numbered by ***line mile*** and structure within the mile (e.g., structure 3/4 is the fourth structure in mile three). Structure 1/1 is near the Lane Substation and structure 41/7 is at the Wendson Substation. The Proposed Action would replace all existing structures with a combination of wood-pole structures and steel-pole structures, as shown in Table 2-1. Spans between individual structures range from 400 feet up to 1,000 feet, with about seven towers for each mile of line.

Two-pole wood structures are used where the structures are in a straight alignment or where turning angles are small (less than 15 degrees). They are the lightest structures because they do not have to withstand the stresses created by angles in the conductors. Four of the two-pole wood structures would be converted to three-pole wood structures, seven would be converted to two-pole steel structures, and 14 would be converted to three-pole steel structures.

The three-pole wood structures are stronger and are placed at intervals along the line to independently hold the weight and tension of the conductors. They are also used at turning angles greater than 15 degrees or on longer spans such as road crossings (Figure 2-1).

Steel pole structures would be used in areas with difficult or poor access to reduce future maintenance or the need for replacement. The steel poles are similar in shape and size to the wood poles, but they have a longer lifespan than the wood poles. Twenty-one of the existing wood-pole structures would be converted to steel pole structures.

BPA would use the same type of wood-pole structure at each existing structure location, except in the 21 locations where steel poles would be used. Like most wood poles used for utility or telephone lines, the wood poles would be treated with a preservative called pentachlorophenol (PCP) to lessen wood rot and extend the life of the poles. The existing steel or wood cross arms that connect the wood poles would also be replaced with steel crossarms. The height of the new structures would be similar to the existing structures in most cases, ranging from 50 feet to 140 feet above ground depending on terrain, requirements for road crossings, and the distance between the top of vegetation and the conductor. Proposed structure heights in some locations would be increased by approximately 5 feet to 10 feet to provide better conductor-to-ground clearance or by 55 feet to 60 feet to accommodate removal of structures 27/4 and 27/5.

Most structures would be placed in the holes of the existing poles. The holes would be cleaned-out and re-augured slightly deeper to a total depth of 7 feet to 12 feet to meet current pole set depth standards. Excess soils excavated from existing wood-pole holes may contain wood preservatives and would be properly handled, removed, characterized, transported, and disposed of according to all applicable regulations at a permitted facility that accepts these materials. If the existing hole could not be reused, then the new structure would be located as close to the existing hole as feasible.

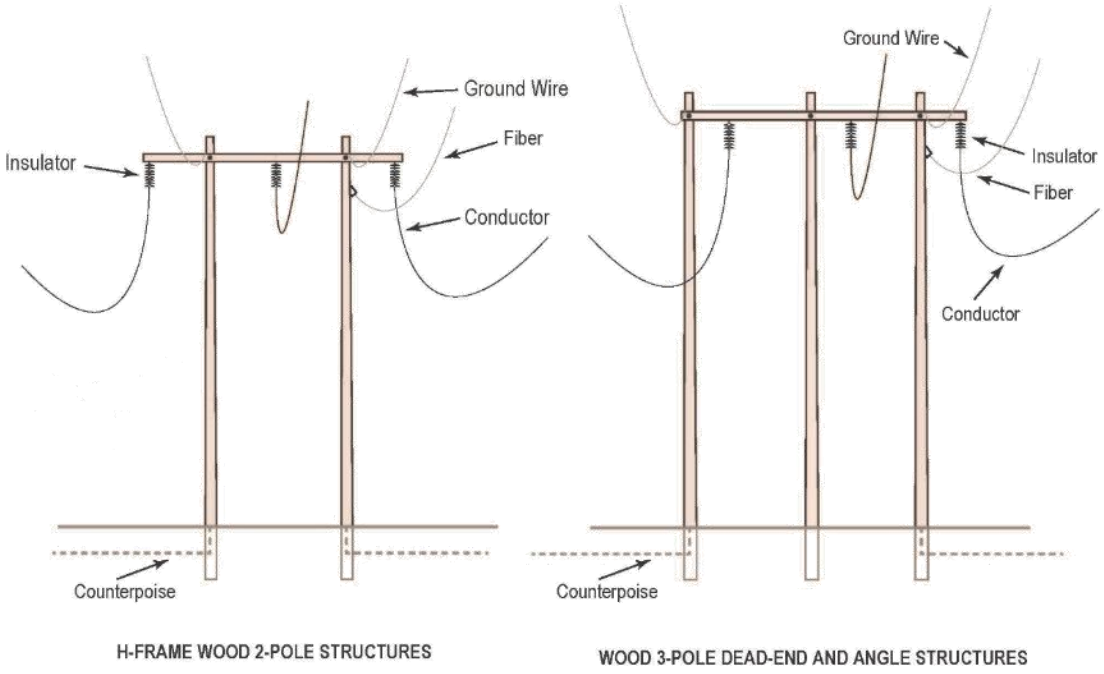

Figure 2-1. Existing and Proposed Wood-pole Structures

Some of the existing structures currently have guy wires. Guy wires attach at various points along the structure and are anchored into the ground to lend stability to structures subject to stress. The old guy wires would either be cut off and replaced or dug out and replaced. BPA would generally install replacement guy wires and anchors in the same location as they currently exist. Guy wire anchors would either be the screw type or plate anchors set about 10 feet deep with the hole backfilled with crushed rock.

Structure replacement activities would disturb an area approximately 100 feet by 100 feet (0.2 acre). The disturbance area could be reduced to a 25-foot radius from the structure center point (0.05 acre) in certain circumstances, for instance where work is near sensitive sites such as wetlands.

Photos of the existing wood-pole structures and parallel transmission lines are shown in Figure 2-2.

Existing three-pole wood structure
Line Mile 8

Existing monopole wood structure
Line Mile 11—single line location

Existing transmission line
Line Mile 4—two parallel lines location; BPA's Lane-Wendson No. 2 230-kV lattice-steel tower pictured on left

Figure 2-2. Photos of Wood-pole Structures and Parallel Transmission Lines

2.1.3 Conductors, Overhead Ground Wire, and Fiber Optic Cable

Conductors are the wires on the structures that carry the electrical current. The transmission line carries three conductors. The conductors would be replaced and installed with new hardware and insulators, which are bell-shaped devices that prevent electricity from arcing from the conductors to the structures and traveling to the ground.

For safety reasons, the National Electric Safety Code (NESC) establishes minimum conductor heights. BPA requires the conductors to be at least 30 feet from the ground, which exceeds NESC's minimum conductor height of 24.9 feet for 115-kV construction, for most of the transmission line because of past safety and landform variation concerns. Additional clearance would be provided over roadway and river crossings.

In addition, dampers may be added on the conductors if necessary. Dampers are devices that are used to suppress wind-induced vibrations on taut conductors for better protection against storms. Dampers would be located within 15 feet of the insulators and would help protect the conductors from wear and premature fatigue failures.

Replacement components would be compliant with the *Suggested Practices for Avian Protection on Power Lines* prepared by the Avian Power Line Interaction Committee (2006). ***Bird diverters*** would be placed on the conductors and/or overhead ground wires on spans where an increased risk of bird strikes exists (e.g., near wetlands and rivers), and where technically feasible.

Overhead ground wire is currently installed on the Lane-Wendson No. 1 transmission line for one mile outside of the Lane, Fern Ridge, Walton, Mapleton, and Wendson substations. This wire protects substation equipment from lightning strikes and would be replaced. There is also a series of wires and grounding rods (called ***counterpoise***) buried in the ground below each structure that holds the overhead ground wire. These wires are used to establish a low resistance path to earth for lightning protection. The counterpoise at all structures where overhead ground wire exists would be replaced during construction.

The existing fiber optic cable that runs for the length of the line would be reused and reinstalled on the new structures.

2.1.4 Staging Areas and Tensioning Sites

Temporary staging areas would be needed to store and stockpile materials, trucks, and other equipment during construction. The staging areas would occupy approximately 30 acres each. The staging area size would be based on the area needed to accommodate new and replaced poles. These staging areas would be within about 5 miles of the transmission line on existing flat, paved, or graveled lots, most likely in an industrial or commercial area. Staging areas would be identified by the construction contractor, prior to construction, and appropriate environmental review and approval of the identified sites by BPA would be conducted.

Tensioning sites are used for pulling and tightening the conductor and fiber optic cable to the correct tension once they are mounted on the transmission structures, as shown in Figure 2-3. Tensioning sites would be located within the right-of-way where possible or, in rare cases, just outside of the right-of-way where the line would make a sharp turn or angle. Each of these sites would disturb an area approximately 150 feet by 100 feet (approximately 0.35 acre). The Proposed Action would likely need about 70 tensioning sites in total. The exact location of the tensioning sites would be determined by the construction contractor and depends on the type of equipment they have, the length of the cable reels they eventually purchase, and terrain factors.

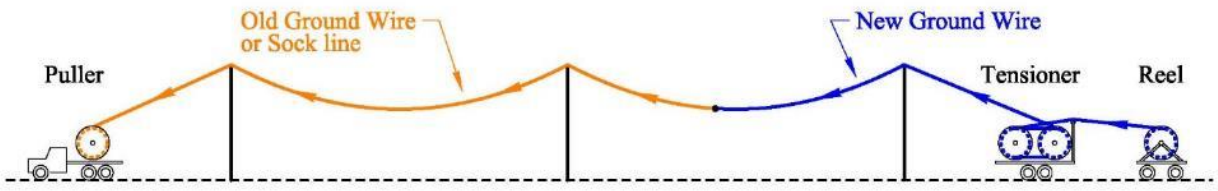

Figure 2-3. Typical Stringing Operation

Helipads may be used for construction. Several tower sites without existing road access would likely need helicopters to move towers and materials to and from the site. One potential helipad location is a large field northwest of Tower 32/4. The other potential helipad site is south of Tower 29/2 on a ridge. About 18 trees ranging from 4 to 27 inches in diameter would need to be cleared to use this site, but no ground disturbance would be necessary.

2.1.5 Access Roads

The system of roads that provides access to the transmission line (access roads) would be improved for the construction phase and to improve the ability to reach the transmission line right-of-way for operation and maintenance activities. The access road system consists of a mix of permits or access road easements across public and private land, and are located within the transmission line right-of-way as much as possible. Generally, BPA obtains a 50-foot wide easement for access road rights. In some cases, BPA purchases easements to structures where no access road is located, such as the temporary access roads, in order to access the transmission line for periodic or emergency maintenance.

Typical BPA access roads are built 14-feet wide with an additional 3-foot offset from each side of the road for slopes or drainage ditches. The total disturbance width for typical BPA access roads is about 20 feet. Additional widths would be disturbed during access road construction in areas with curves or on steep slopes because cut and fill would be required. In specific wetland areas, the access road widths are reduced to 12 feet and the offsets on either side are reduced to 2 feet for a total area of disturbance of 16 feet to minimize temporary and permanent impacts.

The total length of access roads for the Lane-Wendson No. 1 project is 70.7 miles. The access road work falls into the following categories (see Table 2-1):

- New trail construction – About 0.9 mile of new foot trails would be constructed where none currently exist. These trails are needed to access towers on steep hills where no roads can be built. New construction would include clearing underbrush, grading the trail tread, and installing waterbars.
- New access road construction – About 1.0 mile of new permanent access roads would be constructed. New construction would involve clearing vegetation, grading and developing the road prism, and gravelling.
- Access road reconstruction – About 12.4 miles of existing access roads that have deteriorated to the point of being unusable by construction equipment would be reconstructed. This could involve vegetation removal, road prism reconstruction, grading, widening to pre-existing conditions, and/or gravelling.

- Access road improvements – About 41.3 miles of existing access roads or driveways would be improved with minor adjustments, including cleaning, widening to pre-existing conditions, or gravelling.
- Direction of travel – About 15.1 miles of direction of travel road would be accessed for the construction activities. No road work would occur in these areas. This category includes existing access roads sufficient for construction activities and agricultural land that can be accessed without temporary access road construction.

The total area of access road work is approximately 135 acres.

Gates, Culverts, and Bridges

Other access road improvements would include the replacement, repair, or addition of a total of 59 gates at the entrances to access roads to prevent public access to private lands and to the transmission line right-of-way. Gate locks would be coordinated with appropriate landowners to ensure that both BPA and the landowner can unlock them.

Twenty new culverts would be installed at existing stream or drainage crossings, 42 existing culverts would be replaced, and 16 culverts would be repaired. One new access road bridge would be constructed, and one existing access road bridge would be replaced to support construction equipment. Of the four existing fords, one would be replaced with a bridge, one would be improved, and two would be removed.

Access Roads on BLM Land

As described above, access road work on BLM land falls into the following categories:

- New construction – There would be no new permanent access roads constructed on BLM land.
- Access road reconstruction – About 1.75 miles of the access road reconstruction would occur on existing roads on BLM land (Table 2-2).
- Access road improvements – About 4.64 miles of the access road improvements would occur on existing roads on BLM land (Table 2-2).
- Direction of travel – About 2.63 miles of the direction of travel on would be on existing roads on BLM land (Table 2-2).
- Temporary access roads – There would be no temporary access roads on BLM land.

Table 2-2 describes and Figure 2-4 shows work associated with the Proposed Action on access-rights roads on BLM land.

Table 2-3 shows the guidance that BPA would follow for existing roads on BLM land. Drainage spacing is the maximum allowed distance between drainage features. As described in section 2.1.1, BPA has filed an *Application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299)* to the BLM (November 14, 2014). This application requests expansion of existing easements and expired easements to a typical 20-foot wide easement for access road rights. In a few locations on BLM land, existing sharp curves would need to be widened to allow

long vehicles carrying wood poles to access the transmission line. In these locations, terrain may need to be altered and vegetation removed outside the 20-foot wide right-of-way during construction. There locations would be reseeded after construction, and are: access roads between structures 13/2 and 13/6; access road near structure 12/6; access road to structure 15/1; access road to structures 16/6 and 17/1; and access road between structures 21/8 and 22/3.

Table 2-2. Description of Proposed Action Work on Access-rights Roads on BLM Land

BLM Parcel number	BLM Designation*	Towers in Parcel	Reconstruction (miles)	Improvement (miles)	Direction of travel (miles)	Trees removed (>6" dbh)	Features Added or Improved
1806110000100	Matrix	8/7-8/8	0.26	0.05	0.00	0	Drain Dips (2) Waterbars (2)
1806070000400	Matrix	12/6-13/6	0.56	0.51	1.49	70	Drain Dips (1) Waterbars (4) Culverts (1) Gates (3)
1807110000200	Matrix	14/8-15/1	0.00	0.38	0.00	7	Ditch Relief (1) Waterbars (1) Gates (1)
1807030000100	Matrix	16/2-17/1	0.15	1.58	0.00	174	Drain Dips (1) Waterbars (3)
1808110000100	LSR	21/6-22/3	0.78	0.37	1.14	113	Drain Dips (3) Waterbars (13)
180800001500	LSR	23/3-24/1	0.00	1.71	0.00	5	Waterbars (2)
1809140000500	LSR	None	0.00	0.04	0.00	0	Waterbars (1)
Total			**1.75**	**4.64**	**2.63**	**369**	

Note: All road surfaces would be gravel. There would be no new access roads on the BLM Eugene District. *BLM Land use designation is either Matrix (General Forest Management Area) or LSR (Late Successional Reserve).

Table 2-3. Drainage Spacing Guidance by Soil Erosion Class and Road Gradient for Access-rights Roads on BLM Land

Gradient (%)	Drainage Spacing[1]	
	Natural Road Surface (feet)	Rock or Paved Road Surface (feet)
3-5	200	400
6-10	150	300
11-15	100	200
16-20	75	150
21-35	50	100
36+	50	50

[1]Spacing is the maximum allowed for the grade. Drainage features may include cross drains, waterbars, ditch-outs, or water dips.

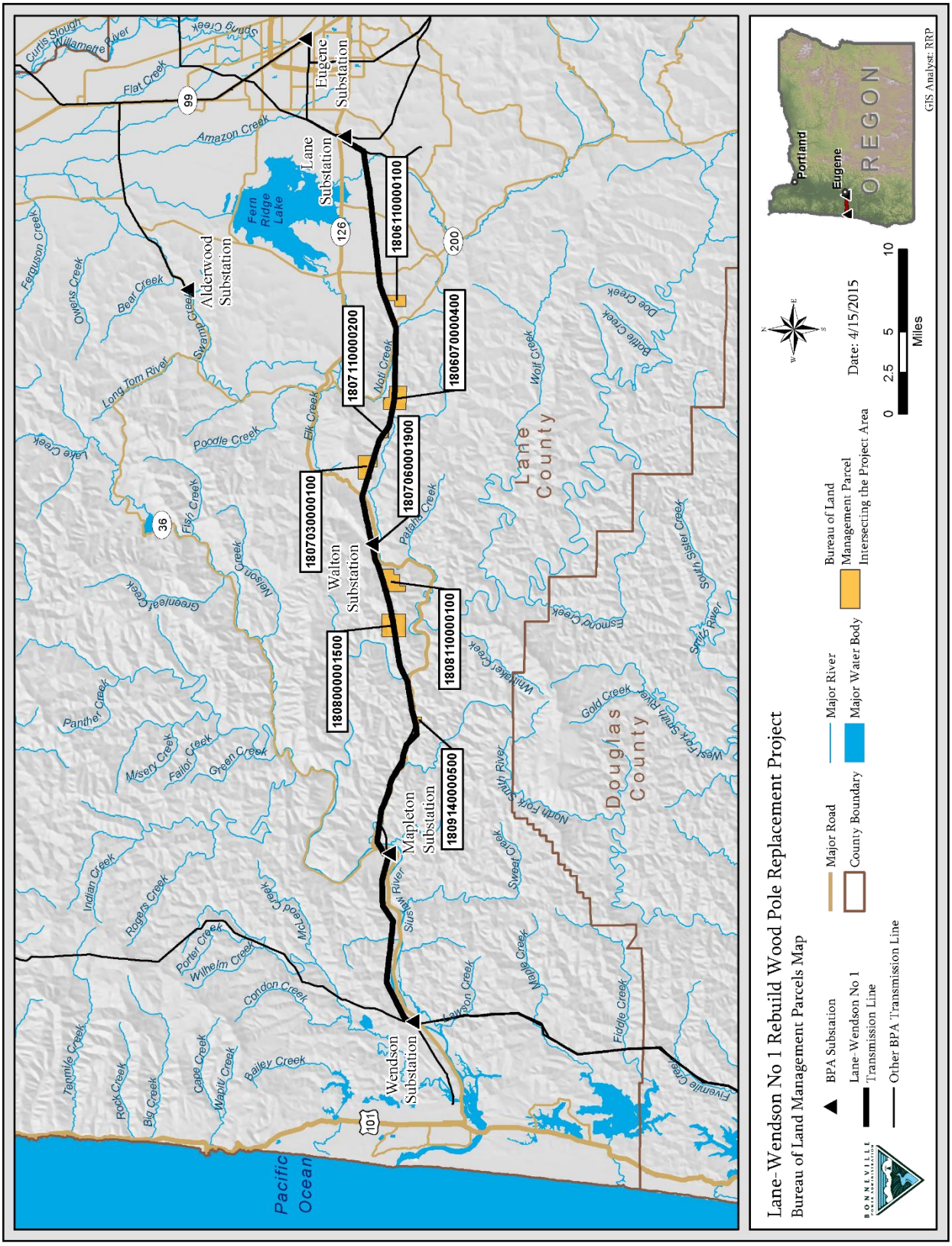

Figure 2-4. Map of Proposed Action Work and Access Roads on BLM

2.1.6 Vegetation Removal

As part of the Proposed Action, vegetation would be removed to facilitate construction and ensure safe operation of the line. A total of about 135 acres of grasses, low-growing ***shrubs***, and agricultural crops would be disturbed or cleared for construction activities; up to 40 danger trees could be cut adjacent to the transmission line right-of-way, and 1,218 trees would be cleared for access road work (Table 2-4).

Danger trees are trees located adjacent to the transmission line right-of-way that have the potential to fall or grow into or grow too close to the conductor and cause flash-overs or line outages. BPA estimates that up to 40 danger trees could require removal, however the specific number and location of danger trees would be identified after construction is complete when the relationship of the rebuilt line to existing trees can be determined.

The 1,218 trees needing removal for the access road work (new road construction, existing road widening, or to provide sufficient clearance for construction equipment) are dispersed over the access road system. BPA would remove these trees for the access road work or so that long construction vehicles, such as trucks with trailers carrying the wood-pole structures, could navigate turns along the access road system. Table 2-4 summarizes vegetation removal from the Proposed Action.

Table 2-4. Summary of Vegetation Removal

Proposed Activity	Quantity
Removal or disturbance of low-growing vegetation within the transmission line right-of-way	About 135 acres as needed
Removal of trees adjacent to transmission line right-of-way (danger trees)	Estimated as up to 40
Removal of trees along access roads[1]	1,218 (dispersed across the access road system)
BLM Eugene District	
Late-Successional Reserve	118
General Forest Management Area	251
Other lands	849

BLM Managed Lands

In the Late ***Successional*** Reserve areas 118 trees would be removed. Only nine of these trees are over 25 inches dbh (the largest being approximately 37 inches dbh). Most of these trees would be removed along two small section of access road that run parallel to the right-of-way about 75 feet away.

In the Matrix (General Forest Management Areas) areas 251 trees would be removed. Only 14 of these trees are over 25 inches dbh, with the largest being approximately 37 inches dbh. These trees would be removed along several miles of access roads.

2.1.7 Construction Activities

Construction would likely take two constructions seasons, with the earliest start of spring or summer 2016. A typical construction crew for a wood-pole structure replacement project

consists of 50 to 80 people, including transmission line and road construction workers, inspectors and administrative personnel, surveyors, and other support personnel.

While structures are being replaced, typically one bucket truck, one excavator, two cranes, and one dump truck would be working at the site. While work is being done on access roads, any combination of dump trucks, rollers, graders, bulldozers, and excavators would be at the site. The existing transmission line would be taken out of service temporarily and existing conductors, insulators, and attachment hardware would be removed. The conductors would be reeled onto spools and removed. Once the new poles and hardware are installed, pulleys would be installed on the structures and a ***sock line*** pulled through each pulley (see Figure 2-3). The sock line may either be flown into place using a helicopter or be manually installed with a bucket truck or lineman climbing up the structure. At the tensioning site, the sock line would be used to pull a heavier line through the travelers (pulleys), and eventually the conductor itself would be attached to this line, strung into place, tensioned, and connected to the insulators and hardware.

Removal of Existing Wood-pole Structures

The removed poles and hardware would be trucked off site for recycling or disposal at an appropriate facility. Prior to and concurrent with pole replacement, access road construction and other improvements would be implemented.

Anticipated Construction Schedule

The schedule for construction of the Proposed Action depends on a variety of factors, including the completion and outcome of the environmental review process, including the duration of regulatory agency reviews and timing of permit approvals. If the Proposed Action is implemented, construction would likely begin in June 2016. Construction work would be done in phases, with construction occurring on more than one structure at a time in different parts of the transmission line right-of-way. Two construction seasons (late spring to early fall 2016 and 2017) would be needed to complete the Proposed Action. If construction begins in June 2016, all major construction activities would likely be completed by December 2017. All phases of construction would be coordinated with the Wild Fish Timber Sale in T.17S, R.7W., sections 27 and 33. All affected landowners would receive a letter indicating the exact start date of BPA operations. BPA would pay landowners for any crop or property damage, as appropriate, that could occur as a result of construction activities.

The following seasonal construction restrictions would be implemented to avoid or minimize impacts to fish and wildlife:

- In-water work:
  - Siuslaw subbasin: In-water work would be conducted between July 1 and September 15 or during Oregon Department of Fish and Wildlife (ODFW) biologist approved extensions.
  - Willamette subbasins: In-water work would be conducted between July 1 and October 15 or during ODFW biologist approved extensions.

- Other wildlife restrictions:
  - Northern spotted owl critical breeding period: No work within established disruption distance and no more than 3 consecutive days of work within disturbance distance between March 1 and July 7.
  - Marbled murrelet critical breeding period: No work within established disruption distance and no more than 3 consecutive days of work within disturbance distance between April 1 and August 5.
  - Marbled murrelet daily timing restrictions: These are applied between April 6 and September 15.
  - Streaked horned lark peak breeding period: No work between April 15 and July 15 within suitable habitat where streaked horned lark presence has been documented.

2.1.8 Ongoing Maintenance and Vegetation Management

BPA conducts routine periodic inspections, maintenance, and ***vegetation management*** of the 15,000-mile federal transmission system in the Pacific Northwest. BPA has operated and maintained the Lane-Wendson No. 1 transmission line since this line was built in 1948. This ongoing operation and maintenance would continue whether or not the Proposed Action was implemented. However, because the Proposed Action includes replacement of worn parts of the existing transmission line and improvements to the access road system, the need for future maintenance and repairs would be less frequent and on a smaller scale than currently required.

Typical maintenance on wood pole transmission lines involves replacing deteriorating structures and insulators. Most maintenance activities are planned a year or so in advance, but occasionally emergency repairs are required which can be due to weather events, fires in the area, or vandalism.

BPA conducts vegetation management along the Lane-Wendson transmission line right-of-way every three to five years to keep vegetation a safe distance from the conductor, maintain access to structures, and to help control ***noxious weeds***. This routine vegetation management is guided by BPA's *Transmission System Vegetation Management Program Final EIS/Record of Decision* (BPA 2000) and is not part of the Proposed Action. When line and road maintenance or vegetation management is required for a BPA transmission line, BPA conducts environmental review for those site-specific maintenance activities as appropriate.

2.2 No Action Alternative

Under the No Action Alternative, BPA would not rebuild the transmission line or build/upgrade access roads, bridges, or culverts, as a single coordinated project. Construction activities associated with the Proposed Action would not occur. However, the reliability and safety concerns that prompted the need for the Proposed Action would remain. BPA would continue to operate and maintain the existing transmission line, replacing aged and rotting structures as they deteriorate, maintaining access roads to allow access to structures on an as-needed basis, and managing vegetation for safe operation.

Given the current age and condition of the transmission line, the No Action Alternative would likely result in more frequent and more disruptive maintenance than has been required in the past. It might be possible to plan some repairs, but many would likely occur on an emergency basis as the transmission line continues to deteriorate.

The overall scale and scope of the repairs that would be done under the No Action Alternative would be smaller and less comprehensive than what is planned under the Proposed Action. The maintenance program addresses immediate needs to keep the transmission line functioning, and would likely not include more comprehensive improvements such as access road work to improve water runoff and fish-friendly culvert replacements. Access road work or construction under the No Action Alternative would be limited to improvements necessary to allow access to specific structures for as-needed repairs and maintenance.

2.3 Comparison of Alternatives

Table 2-5 compares the Proposed Action and the No Action Alternative by the purposes or goals to be achieved while meeting the need for action as described in Section 1.3. Table 2-6 compares and summarizes the potential environmental impacts of the alternatives.

Table 2-5. Comparison of the Proposed Action and No Action Alternative

Purpose of Project	Proposed Action	No Action Alternative
Maintain or improve transmission system reliability to BPA and industry standards	Replacing deteriorating structures and associated equipment would help enhance reliability by reducing the risk of unplanned outages and the need for emergency repairs. Improved access roads would help ensure that emergency repairs could be made quickly.	Outdated and physically worn structures and associated equipment would pose a greater risk for unplanned outages and unreliable service. Emergency response times could increase due to access roads that are in poor condition.
Continue to meet BPA's contractual and statutory obligations	The rebuilt transmission line would help ensure that BPA will continue to meet its obligations to maintain a safe and reliable transmission system and to deliver power to its customers in western Oregon.	The existing line would continue to deteriorate and threaten system reliability and subsequent power delivery to its customers in western Oregon.

Purpose of Project	Proposed Action	No Action Alternative
Minimize environmental impacts	Environmental impacts from construction would occur (see Table 2-6 for a summary of impacts for each resource). Construction impacts would be primarily short-term, and would be mitigated through appropriate BMPs and mitigation measures described in each resource section of Chapter 3. Some beneficial environmental impacts (for example improving fish passage) would be realized.	There would be no construction-related environmental impacts, but impacts would still occur and would be spread out over time as BPA has to replace deteriorating structures and associated equipment and repair access roads. As some of these repairs would likely be done on an emergency basis, there may not be time to accommodate planning efforts to coordinate with landowners or avoid or lessen impacts to environmental resources. (See Table 2-6 for a summary of impacts for each resource).
Demonstrate cost-effectiveness	Total costs would be about $12 to 18 million.	The No Action alternative would not require the expenditure of funds to rebuild the transmission line at his time. Repairs would require an ongoing outlay of funds to replace failed structures, rebuild roads, and replace and restring failed conductors. The rate of maintenance spending would likely increase as aging structures fails at increasing rates. An as-needed approach would likely increase the cost associated with multiple mobilizations and would likely be less cost efficient, when compared to the Proposed Action.

Table 2-6. Comparison of Environmental Impacts by Alternative

Alternative	Impact Level When Combined with Mitigation Measures	Potential Impacts
Land Use, and Recreation		
Proposed Action	***Low***	• Temporary and localized disruption of crops and/or harvesting activities and disruption of livestock • Temporary access changes to limited properties and increase in noise and dust • Removal of four BPA towers in line miles 21, 27, 29, and 31, lessening disruption to forestry activities nearby
No Action Alternative	***Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Geology and Soils		
Proposed Action	***Low***	• Soil disturbance and ***compaction*** • Temporary ***erosion*** and/or dust • Soil contamination from PCP treatment of wood poles
No Action Alternative	***Moderate***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Vegetation		
Proposed Action	***Low***	• Vegetation removal and changes in plant cover • Soil compaction and disturbance • Increased potential for spread of ***invasive plants*** and altering adjacent vegetation communities
No Action Alternative	***Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Streams and Fish		
Proposed Action	***Low*** *for Streams* ***Low to Moderate*** *for Fish*	• Increased erosion, runoff, sediment deposition, and turbidity • Improved flow control and localized habitat improvements • Disturbances to fish habitat and individual fish • Substrate disturbance • Potential spills of hazardous materials into or near streams • Improved fish passage and channel conditions at culverts and bridges
No Action Alternative	***Low to Moderate***	• Sedimentation and erosion during emergency repairs • No replacement of fords and undersized and impassable culverts • Fish mortality and habitat impacts during emergency repairs

Table 2-6. Comparison of Environmental Impacts by Alternative (continued)

Alternative	Impact Level When Combined with Mitigation Measures	Potential Impacts
Wetlands, Floodplains, and Groundwater		
Proposed Action	***Low to Moderate*** for wetlands and floodplains ***Low*** for groundwater	• Culvert and ford replacements and installation of new culvert and bridge • Placement of fill materials in wetlands, streams, and floodplains • Disturbance of wetlands and floodplains and temporary disruption of wetland and floodplain functions • Soil compaction and crushing of wetland and floodplain vegetation • Potential for accidental chemical spills and PCP leaching from wood poles
No Action Alternative	***Low to Moderate*** *for wetlands and floodplains* ***Low*** *for groundwater*	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Wildlife		
Proposed Action	***Low*** for habitat alterations ***Moderate*** for noise and activity levels	• Habitat loss, modification, degradation, and short-term disturbances • Avian collisions with conductor • Temporary noise and activity disturbances to wildlife
No Action Alternative	***Low to Moderate***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Cultural Resources		
Proposed Action	***None to Low***	• No ground disturbance or alteration of cultural resource sites/isolates • No change to integrity of facility under NRHP
No Action Alternative	***None to Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Visual Quality		
Proposed Action	***Low***	• Temporary changes in visual environment (presence of workers, equipment, materials, signage; movement of vehicles and traffic congestion) • Change in pole height in some locations • Tree removal
No Action Alternative	***Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Socioeconomics and Public Services		
Proposed Action	***Low***	• Temporary increase in population, stimulation of the economy, demand for lodging
No Action Alternative	***Moderate***	• Reduced reliability of transmission line as a power supply

Table 2-6. Comparison of Environmental Impacts by Alternative (continued)

Alternative	Impact Level When Combined with Mitigation Measures	Potential Impacts
Noise, Public Health, and Safety		
Proposed Action	***Low***	• Construction noise from equipment and vehicles • Potential disturbance of unknown hazardous materials
No Action Alternative	***Moderate***	• Power source for public safety agencies, health providers, and businesses at risk • Potential fire from collapse of structures • Increased noise levels during emergency repairs
Transportation		
Proposed Action	***Low***	• Temporary traffic delays and changes to traffic flow
No Action Alternative	***Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Air Quality		
Proposed Action	***Low***	• Temporary increase in dust and contaminants • Temporary reduction in visibility
No Action Alternative	***Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed
Greenhouse gases		
Proposed Action	***Low***	• Increase in ***greenhouse gas*** concentrations from vehicle and equipment emissions and vegetation removal • Loss of greenhouse gas sequestration potential from tree removal
No Action Alternative	***Low***	• Similar to Proposed Action but spread out over time as emergency repairs are needed

Chapter 3. Affected Environment, Environmental Consequences, and Mitigation Measures

This chapter describes the existing environmental resources that could be affected by the Proposed Action and the potential impacts the Proposed Action and the No Action Alternative would have on those resources. The design features and mitigation measures that would lessen or avoid impacts to the environment are described in the environmental consequences for the Proposed Action under each resource. As described in Chapter 2, "project area" refers to the combination of the transmission line right-of-way (the area in which the structures are located) plus the access road system, unless otherwise defined in a specific section.

3.1 Land use and recreation

3.1.1 Affected Environment

The project area is located within Lane County, beginning southwest of Eugene at the Lane Substation and continuing generally west to the Wendson Substation approximately 4 miles east of Florence, by way of the Fern Ridge, Walton, and Mapleton substations. Structures are located completely outside of city limits and urban growth boundaries. The project area passes south of the City of Veneta (approximately line mile 7) and through the unincorporated rural communities of Walton (approximately line mile 19) and Mapleton (approximately line mile 33).

The transmission line generally runs parallel to Oregon Route 126 (OR 126), crossing OR 126 eight times near structures 17/7, 28/5, 29/4, 30/5, 31/3, 31/4, 31/5, and 33/1, following the highway closely in line miles 26 through 33.

Existing Land Uses

The predominant land use from the Lane Substation to the Fern Ridge Substation is agriculture with some rural residential uses. From the Fern Ridge Substation west to the Wendson Substation, land uses are primarily forested with some rural residential lands. There are a number of segments of the transmission line where BPA easements vest landowners with a right to grow an orchard or Christmas tree farm, including segments in line miles 3, 4, 5, 7, and 25. In these areas it is BPA's policy to design an increased height over the vegetation where possible. Table 3-1 describes characteristics of farms in Lane County.

Table 3-1. Farm Characteristics in Lane County and Oregon

Geographic area	Number of farms	Land in farms	Average farm size	Top three commodity groups by value of sales
Lane County	2,660	219,625 acres	83 acres	1. Nursery, greenhouse, floriculture, and sod 2. Other crops and hay 3. Fruits, tree nuts, and berries
Oregon	35,439	16,301,578 acres	460 acres	1. Cattle and calves 2. Other crops and hay 3. Nursery, greenhouse, floriculture, and sod

Source: U.S. Department of Agriculture (USDA) 2012.

Land uses outside of the transmission line right-of-way are regulated by the ***comprehensive plan*** and ***zoning*** ordinance of the jurisdiction within which they are located. The project area is located within a series of Lane County zoning districts, which are listed in Table 3-2. Figure 3-1 illustrates existing zoning within the project area.

Table 3-2. County Zoning Districts in the Project Area

Jurisdiction	Zoning district
Lane County	E25—Exclusive Farm Use (25 acre minimum)
	F1—Non-Impacted Forest
	F2—Impacted Forest
	PR—Parks and Recreation
	RI—Rural Industrial
	RPF—Rural Public Facility
	RR-1—Rural Residential (1 acre minimum)
	RR5—Rural Residential (5 acre minimum)
	RR-10—Rural Residential (10 acre minimum)

Source: Lane County 2014.

The project area is located in an area subject to the Coastal Zone Management Act (CZMA), which is implemented in Oregon through the Oregon Coastal Management Plan. Chapter 4 includes more information about the CZMA and the Oregon Coastal Management Plan as well as a discussion of the local land use plans and policies.

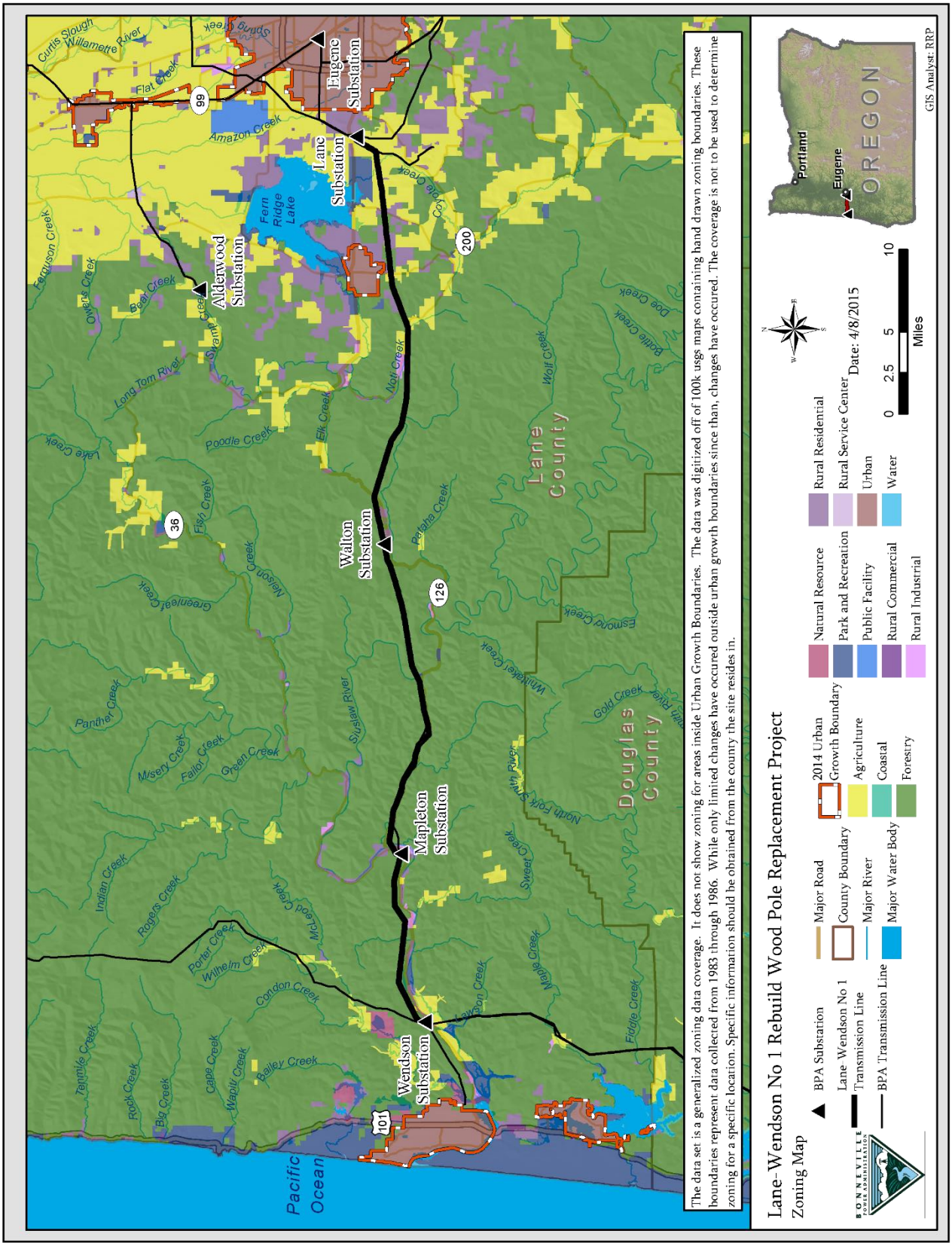

Figure 3-1. Existing Zoning Intersecting the Project Area

Land Ownership and Management

Land ownership in the project area is a mix of public and private ownership. Publicly-owned lands include parcels owned by BLM, City of Eugene, Lane County, Oregon State Board of Forestry, State of Oregon Department of Forestry, and USFS. Many of the privately-owned parcels along the transmission line are owned by timber companies, such as Rosboro and Oxbow Timber. In addition, The Nature Conservancy and the Oregon State University Foundation, both non-profit organizations, own land in the project area.

The Eugene BLM District parcels in the project area are part of the Oregon and California Railroad Revested Lands (O&C lands), which form a checkerboard pattern throughout western Oregon and are managed under the O&C Lands Act of 1937 (43 U.S.C. § 1181a et seq.). BLM manages these lands under its 1995 Resource Management Plans (RMP). The RMP designated two types of land use allocations that intersect the project area; each are managed with the following objectives:

- Late ***Successional*** Reserves: These areas provide ***habitat*** for northern spotted owl and marbled murrelet, as well as other species associated with late-successional and old-growth forest ecosystems.
- Matrix (General Forest Management Areas): These areas provide a sustainable supply of timber and other forest commodities; connectivity between Late Successional Reserves; habitat for organisms associated with both late-successional and younger forests; important ecological functions; and early-successional habitat (BLM 1995).

The project area crosses the City of Eugene's Coyote Prairie wetland ***mitigation bank*** site. Enhancement activities, such as non-native plant removal, seeding with native plants, and hydrologic enhancements have been performed on the site (The Conservation Registry 2011).

Adjacent to the Coyote Prairie site, the project area crosses land referred to as the Coyote Creek property. This 310-acre property was acquired by The Nature Conservancy with the intent of transferring it to ODFW to own, manage, and restore as wet prairie in coordination with the adjacent Fern Ridge Wildlife Area (ODFW 2013).

The USFS parcels are part of the Siuslaw National Forest and are managed by USFS under the 1990 Siuslaw National Forest Land and Resource Management Plan (also referred to the Forest Plan) and the 1994 Northwest Forest Plan. The Forest Plan identifies 15 specially designated Management Areas (USFS 1990); however, the project area does not pass through any of these Management Areas. The Forest Plan establishes 28 goals for management of the Siuslaw National Forest that reflected desired future conditions for timber, old-growth forest, watersheds, fish and wildlife habitat, recreation, and other resources.

Recreation Areas

Approximately 350 feet of the project area crosses through the northern portion of Camp Lane Park between structures 25/6 and 26/1. This 15-acre park is owned and managed by Lane County Parks Department and is located between OR 126 and the Siuslaw River. It provides lodging for up to 140 people (160 with camping) in a variety of structures including a lodge, A-frame building, Adirondack and treehouse sleeping structures, and a yurt. In addition, the park provides restrooms, a commercial-sized kitchen, dining hall, picnic tables, a covered multi-use court, an amphitheater, volleyball, horseshoes, tetherball, swimming hole, trails, and an open field (Lane County 2013). The camp is available by reservation only and is routinely booked April through October each year for large group events, such as camps and weddings. A Lane County Parks employee lives on-site. The transmission line crosses over the field and structures 25/6 and 26/1 are visible from the field.

Camp Lane Park's covered multi-use court with A-frame and lodge in the background.

View of transmission line from field at Camp Lane Park

Other recreation areas in the vicinity of the project area, but not located within or adjacent to the transmission line right-of-way include:

- Archie Knowles Campground – located near mile marker 18 on OR 126 in the Siuslaw National Forest. This USFS campground is situated between OR 126 and Knowles Creek and includes restrooms, picnic tables, nine camp sites (no water/electric hook-up), and a pet area. The USFS website identifies the campground status as closed due to water system failure (USFS 2014). The transmission line (structures 31/1 and 31/2) is approximately 400 feet north of the campground but is not visible from the campground because of the tall evergreen trees.
- East Coyote and West Coyote Units of the Fern Ridge Wildlife Area – located on the north side of Cantrell Road. This ODFW site provides hunting, benches, and trails. The transmission line (structures 2/6 through 4/4) is located approximately 1,300 feet south of the southern boundary of this site and the Lane Substation is approximately

4,000 feet east of the eastern boundary. The transmission line and Lane Substation are visible from the site.

- Linslaw Park – located near milemarker 21 on OR 126. This Lane County park provides restrooms, picnic tables, fishing opportunities, and a boat ramp. The transmission line (structure 25/1) is approximately 6,200 feet north of the park and is not visible from the developed portion of this park.
- Mapleton Landing County Park – located near the intersection of OR 126 and Highway 36. This Lane County park provides restrooms, fishing opportunities, and a boat ramp. The transmission line (structures 33/6 and 33/7) is approximately 1,400 feet north of the park. The portion of the transmission line crossing the Siuslaw River can be seen from the boat ramp.

In addition, the project area passes just south of the Mapleton Pioneer Cemetery, located on Rice Road, near structures 33/7 and 33/8. The transmission line is located approximately 300 feet north of the cemetery and is visible through the trees.

3.1.2 Environmental Consequences—Proposed Action

Agricultural and Forestry Uses

An approximately 100 foot by 100 foot area would be temporarily used for staging and construction of each structure that would be replaced, which is equivalent to 10,000 square feet (roughly 0.2 acre). Potential construction impacts to agricultural lands and uses from construction of the Proposed Action could include temporary and localized disruption of crops and/or harvesting activities in actively cultivated fields and disruption of livestock grazing.

A number of the structures are located on land that is actively used as cultivated fields and for livestock grazing within the transmission line right-of-way. These structures would be replaced in their current locations, which could result in the temporary disturbance of approximately 215.2 acres of agricultural land (27.0 acres are ***Prime Farmlands***, [including land that would be prime farmland if drained and/or protected from flooding] and 46.5 acres are ***Farmlands of Statewide Importance***). While construction would likely span two growing seasons, individual landowners would likely only be affected for one season as construction would be conducted in phases and all construction activities along a given segment of the transmission line would be conducted within a period of a few months. Additionally, discrete construction disturbances would be short duration (on average less than 1 day per structure replacement, and 1 to 3 days per mile of access road work).

This temporary impact would represent a small amount of agricultural land in comparison with the total existing agricultural land in Lane County (219,625 acres) (USDA 2012). Short-term disturbances from equipment movement, staging, and construction could result in some crop loss; however, none of these activities would permanently alter existing agricultural uses. Other impacts to agricultural uses in the project area could include temporary and localized increases in dust, noise, soil compaction, and erosion. Because the construction impacts would result in short-term disturbances, and BPA would implement construction BMPs, the Proposed Action would have a low impact on agricultural land uses.

The transmission line right-of-way is cleared of vegetation as part of routine operations and maintenance, including sections that traverse publicly- and privately-owned forest lands. Since structure replacement would occur within BPA's existing right-of-way, the primary construction impacts on forestry activities would include removal of over 1,200 trees along access roads, limited danger tree removal, temporary disruption of forestry activities (i.e., route changes; temporary noise, dust, and air quality for forestry workers), or temporary access changes to properties. Property owners, including BLM, would be allowed to keep the felled trees cut on their land during tree removal. BPA would dispose of trees that property owners do not choose to retain. The removal of four BPA towers in line miles 21, 27, 29, and 31 would present an overall benefit to forestry land uses because BPA would no longer have to access these sites, thus reducing potential disruptions to forestry activities.

Approximately 134.6 acres of agricultural land would be disturbed as a result of access road work. Of the disturbed farmland acreage, 8.2 acres are designated as Prime Farmlands (including land that would be prime farmland if drained and/or protected from flooding) and 25.6 acres are designated as Farmlands of Statewide Importance. In the context of the total existing agricultural land in the county (219,625 acres), these impacts are low comparatively.

Construction of approximately 0.6 mile of new access trails outside of the transmission line right-of-way would permanently convert approximately 0.22 acres of forested land to new trails. No new access roads would be built outside of BPA's right-of-way. New trails would be relatively short (700 feet or less) and would not prohibit the remainder of the property from continuing to be used for forestry uses. The rest of the new construction access roads and trails would occur within BPA's right-of-way. Overall, the Proposed Action would have a low impact on forestry land uses.

Commercial and Industrial Uses

There are a few rural commercial and industrial uses near the project area that may experience temporary impacts from construction activities. These impacts could include increases in noise and dust in the vicinity as well as temporary access closures. Because construction impacts would be short-term in duration and would still allow for the continuance of existing land uses, the Proposed Action would have a low impact on commercial and industrial land uses.

Residential Uses

Construction of the Proposed Action near the rural residences adjacent to the project area would be limited to temporary noise, dust, and access disruptions due to construction activities. Because impacts would be short-term, and would not change use of the land, the Proposed Action would have a low impact on residential uses.

Recreation

None of the structures that would be replaced are located within the boundaries of the park and recreation areas located along or near the project area; however, there are structures that would be replaced near these properties. Potential impacts include traffic delays to enter and exit the park and recreation areas from public roadways, and dust and noise from construction activity.

- Camp Lane Park – The transmission line crosses the open field at the north end of Camp Lane Park, as described in Section 3.1.1, so park visitors using the field could be disturbed by noise, dust, and visual distractions when structures 25/6 and 26/1 are replaced. For safety reasons, this field may need to be temporarily closed when BPA re-strings the conductor between these structures. However, it is unlikely that access to the other developed facilities at Camp Lane Park would need to be closed during construction, and the transmission line is not visible from these areas of the park, so visitors would likely only be disturbed by temporary construction noise and dust.
- Archie Knowles Campground – Although the project area is located very close to Archie Knowles Campground, since the campground is closed to visitors and OR 126 is located between the campground and the transmission line, it is unlikely there would be any impacts at this recreation site.
- East Coyote and West Coyote Units of the Fern Ridge Wildlife Area – Construction, reconstruction, and improvements to certain segments of access road would take place at least 700 feet south and east of the boundaries of the Fern Ridge Wildlife Area. Given the flat terrain of the area, this work would likely be visible to recreational users, and noise and dust could temporarily affect recreational users.
- Linslaw Park – All construction activities would be over 1 mile away from this park. Given the distance, hilly topography, and forested land uses between the park and these improvements, it is unlikely that park visitors would be disturbed by construction of these access road work.
- Mapleton Landing – Construction activities would take place at least 1,500 feet north of the park property and would be separated from the park by the Siuslaw River, OR 126, and the commercial area in Mapleton, so it is unlikely park visitors would be disturbed by construction activities.

Given the short duration of construction disturbances (on average less than 1 day per structure replacement, and 1 to 3 days per mile of access road work), impacts to recreational users at Camp Lane Park and Fern Ridge Wildlife Area would be low.

The improved access road and trail network could potentially increase public access to BLM, USFS, and other public lands, or private lands. Unauthorized use of BPA's access roads could result in activities such as off-road vehicle use, illegal dumping, and trespassing on private properties. However, BPA would be installing or replacing gates at access road entrances to deter unauthorized access and would work with individual property owners to address problem areas if appropriate. Overall, the Proposed Action would have a low impact on recreation uses.

3.1.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to land use and recreational areas from the Proposed Action:

- Provide a construction schedule to all potentially affected landowners and allow landowners to keep felled trees cut on their land as requested.

- Post a construction schedule in affected recreational areas.
- Maintain existing access to residences and other areas during construction.
- Limit construction activities to the existing right-of-way and easements to minimize impacts to timber harvest and other forestry activities.
- Coordinate with individual landowners to ensure that access road work and gates, and construction and maintenance activities would minimize disruptions to commercial forestry operations.
- Compensate landowners for the value of property damaged or destroyed by construction activities.
- Coordinate with local agencies to avoid construction activities that could conflict with their own construction activities.
- Install permanent gates at selected locations to minimize unauthorized entry to private property crossed by BPA access roads and to BPA transmission line right-of-way.

3.1.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, impacts to land uses and recreation associated with the construction of the new structures and structure components would not occur at this time. However, as existing structures continue to deteriorate, construction-related activities associated with structure replacement and access road work would increase and landowners could be disrupted much more often than under normal line maintenance conditions. Construction-related impacts would be similar to the Proposed Action (disturbance of individual structure sites and portions of the transmission line, interference of access to individual properties, and noise and dust), but spread out over time, resulting in low impacts. Emergency repairs could be needed and if conditions prevent access along existing access roads, new construction-related impacts to land use and recreation, such as vegetation removal and traffic delays, could occur.

3.2 Geology and Soils

3.2.1 Affected Environment

Geology and Topography

The project area for geology and soils extends through the Willamette Valley and Oregon Coast Range ***physiographic provinces*** (Orr and Orr 2012). The geology of the Willamette Valley province is largely comprised of ***alluvial*** and riverine sediments deposited from the Late Eocene to present day. The deposits vary in composition from gravel to silt. The geology of the Oregon Coast Range province is dominated by Quaternary age elevated terrace alluvial deposits and Tertiary age igneous and sedimentary rocks. The alluvial deposits, from a former river flood plain, are composed of silt, sand, and thin layers of gravel located north of the Siuslaw River. The igneous rock deposits are mainly submarine basalt formations, and the sedimentary deposit consists of highly weathered marine sandstone and siltstones (Schlicker and Deacon 1974). The

elevation along the transmission line ranges from a minimum elevation of approximately 20 feet at the Siuslaw River crossings to a maximum elevation of approximately 1,500 feet within the Coast Range. Steep slopes are found throughout the project area.

The project area crosses several mapped landslide hazard areas, as shown in orange on Figure 3-2 (DOGAMI 2013). Approximately 17 structures are located within the mapped landslide hazard areas, and some access roads are within or near mapped landslide areas. Two landslides are mapped in the vicinity of the project area. One mapped landslide is located approximately 500 feet north of the right-of-way and structures 33/7 and 33/8, near the Mapleton Substation. The second mapped landslide is located near the Wendson Substation. Structures 41/3 through 41/5 are within the mapped boundary of the second landslide. Seven additional areas were identified by a landslide hazard assessment that was performed and are listed below and labeled on Figure 3-2 (GeoEngineers 2013).

A. Site 1 – West of structure 12/4
B. Site 2 – Structure 23/3
C. Site 3 – Structures 24/1, 24/2, 24/3, 24/4
D. Site 4 – Structures 31/2, 31/3 and 31/4
E. Site 5 – Structures 32/2 and 32/3
F. Site 6 – At structure 35/3 and south
G. Site 7 – Southwest of structure 41/2, partially within right-of-way

The project area crosses several locations mapped as having a moderate earthquake soft soil hazard (DOGAMI 2013). Liquefaction occurs when soil becomes soft and liquid like during very strong ground shaking (e.g., associated with an earthquake). Wet or low lying areas with unconsolidated sediment are generally susceptible to liquefaction. Bedrock areas are not susceptible to liquefaction. Approximately 64 structures are located within the mapped soft soil hazard areas. Structures located in soft soil hazard areas are susceptible to movement and failure due to the risk of liquefaction in soft soils. The susceptibility of structure failure due to liquefaction in the study area ranges from low to high, with most structures falling in the low to moderate range of susceptibility (DOGAMI 2013).

Erosion hazards include areas overlain by soils with a high or severe erosion hazard, as rated by the Natural Resources Conservation Service (NRCS), and steep slopes. The NRCS considers slope and soil properties such as cohesion, drainage, and organic content in determining soil erosion hazard classes of soils. Generally, coarse-grained soils on level to low-slope ground that are well drained have low erosion hazard potential. Conversely, fine-grained soils on steep slopes that are poorly drained have the greatest erosion hazard potential. Approximately 38.9 percent of the transmission line right-of-way is rated as having a severe erosion hazard due to the erodible nature of the soil deposits that occur in the project area (NRCS 2013).

Soils

Forty (40) soil types are present within 50 feet of the structures within the project area (NRCS 2013). These soils are susceptible to low to high levels of erosion when exposed to water or wind (NRCS 2013).

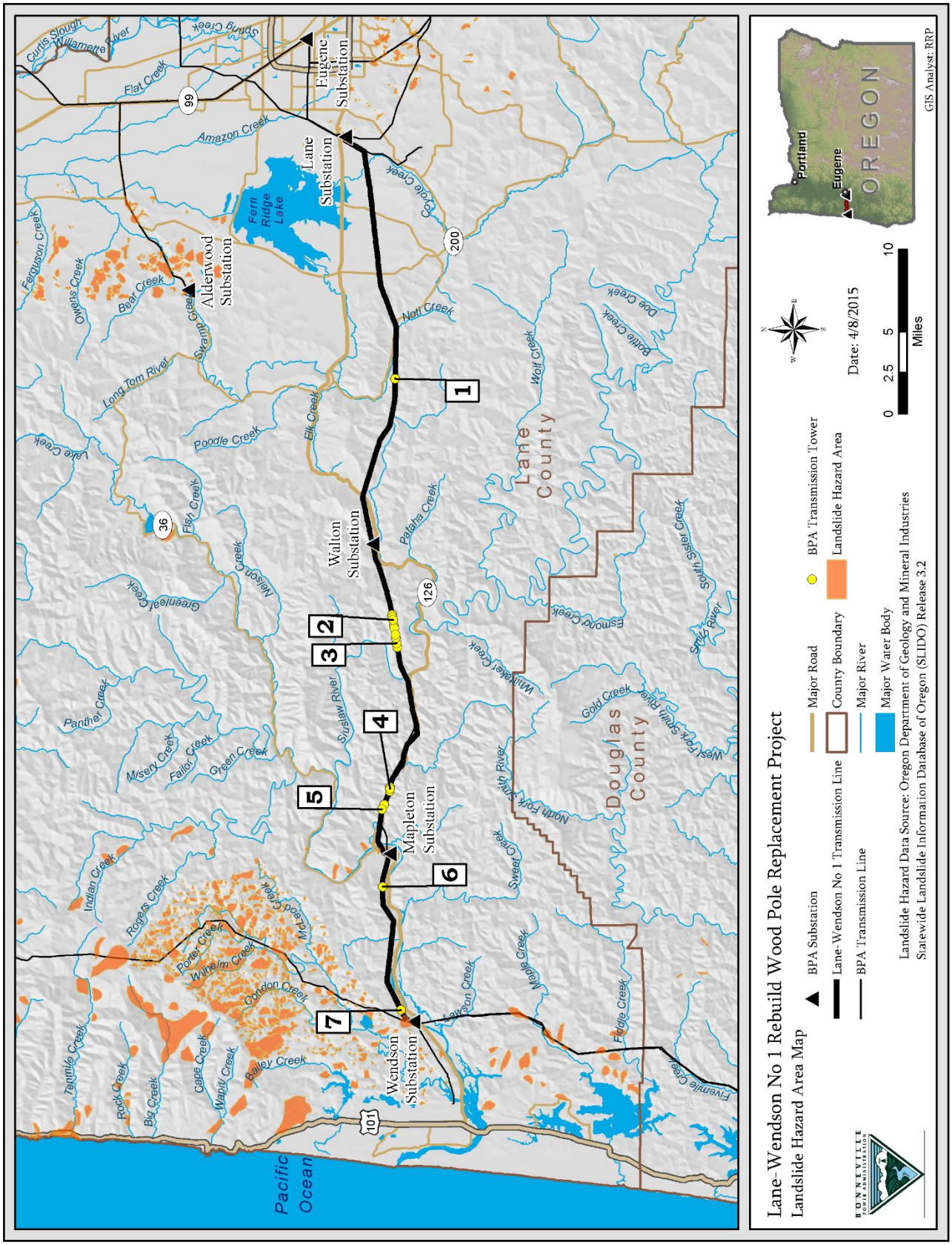

Figure 3-2. Landslide Hazard Areas

3.2.2 Environmental Consequences—Proposed Action

Impacts to soils could results from ground clearing and soil piling, compaction from heavy equipment, or contamination from wood-pole preservative or accidental equipment spills. Ground that has been cleared of vegetation could be susceptible to erosion and establishment of noxious weeds (Section 3.3). Ground compaction could degrade the soil structure and reduce soil productivity and the soil's ability to absorb water.

At most structure sites, structure replacement activities would disturb an area approximately 100 feet by 100 feet per structure (approximately 0.2 acre). If possible in sensitive habitats such as wetlands, this area would be reduced to a 25-foot radius per structure (approximately 0.05 acres), centered on the structure center point to minimize the area disturbed by replacement activities. If the area is wet, crane mats would be used to minimize disturbance to soils.

Replacement of the 291 wood-pole structures would temporarily disturb about 67 acres of soils during structure replacement activities. The existing structure holes would be used where possible for the new structures, minimizing potential soil disturbance. At most structure sites, additional soil removed by the auger would be spread evenly around the structure sites. At structure sites determined to be within sensitive areas (e.g., wetlands), the augered soil would be removed from the site and disposed of at an appropriate waste disposal site that BPA has reviewed and approved. Temporary soil compaction from the use of heavy machinery at each structure site would be limited to areas immediately adjacent to the structures. These areas would be revegetated or allowed to return to allowable uses following completion of construction.

The potential for erosion would be highest during heavy rainfall, or during strong winds in dry weather, and on steep slopes. Prompt mulching, seeding, and fertilizing of exposed soils would help reduce the potential for erosion from the disturbed sites. Until vegetation becomes reestablished, soil erosion and the creation of small channels could occur; however, once vegetation is established erosion would be unlikely. With the implementation of BMP's and conducting peak construction work during the dry season, impacts to soils would be low. Erosion and compaction impacts at staging areas would also be unlikely since the area used would likely be previously disturbed, level, and already paved or graveled. Because erosion or dust impacts would be short-term and in a relatively small area, the impacts to soils would be low.

Trees would be felled, but the roots left in place. This practice, in combination with mitigation measures listed in Section 3.2.3, would result in low impacts if the Proposed Action to soils.

The project area is in a seismically active region. Transmission line tower foundations built on soil that is susceptible to liquefaction could settle differentially and/or displace laterally during strong ground motion. Depending on the magnitude of movement, the tower could be rendered unusable, or in extreme conditions, the tower could fail. Under these circumstances, additional maintenance or repairs would be required. Construction of the project generally would not affect the liquefaction susceptibility of the soil.

Several landslides have been identified in the project area. However, the risk for structures to be impacted by landslides is low (GeoEngineers 2013). Structures located within active landslide areas could be problematic if the structures move with the sliding earth. Wood-pole structures are relatively flexible and can withstand minor movement; however, if minor movement occurs over several years (or even decades) the cumulative movement may be enough to stress the structures and conductor causing the structure to fall, potentially jeopardizing the functioning of the transmission line and public safety. Access roads located within active landslide areas and steep terrain could increase the risk of landslides. BPA would include geotechnical BMPs such as the construction of gabion walls, a common type of low gravity retaining structure to stabilize slopes, and repairing slumps during construction to avoid overburdening unstable areas. Following the recommendation in the Landslide Hazard Assessment (GeoEngineers 2013) and mitigation measure presented in Section 3.2.3 would reduce landslide impacts to low levels.

The wood-pole structures would be treated with PCP, a wood preservative commonly used for treatment of utility poles. PCP contains chlorinated dibenzodioxins and chlorinated dibenzofurans that have the potential to leach into soils or water if the pole is in contact with water, such as in wetlands. PCP can move through the pole and leach from the bottom of the pole into the soil near the underground portion of the pole (EPA 2008). PCP tends to move through the pole rapidly for the first few years of use, and then becomes relatively constant with time (EPA 2008). PCP has a tendency to rapidly degrade in the environment, and concentrations decrease by as much as two orders of magnitude between 3 inches and 8 inches from the wood pole, but PCP migration is dependent on localized factors such as soil type, soil chemistry, local weather, and topography, initial level of pole treatment, and age of pole (EPRI 1995). In wetlands, wood-pole structures would have a multi-layer barrier wrap placed around the pole to contain PCPs before it is installed in the ground and prevent them from leaching into surrounding soils.

3.2.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to geology and soils from the Proposed Action:

- Place new structures in existing structure holes to the maximum extent practicable to reduce ground disturbance.
- Use multi-layer barrier wraps around base of pole to prevent preservative from leaching into surrounding soils.
- Conduct project construction, including tree removal, during the dry season when rainfall, runoff, and stream flow are low to minimize erosion, compaction, and sedimentation, to the extent practicable.
- Follow Landslide Investigation and Mitigation guidance or other current geotechnical engineering guidance to minimize impacts from structure replacement and road work in known landslide hazard areas (Transportation Research Board 1996).
- Contact BPA geotechnical specialists if geotechnical issues, such as new landslides or potentially liquefiable soils, arise during design or construction.

- Install sediment barriers and other appropriate erosion-control devices where needed to minimize sediment transport.
- Retain vegetative buffers where possible to prevent sediment from entering waterbodies.
- Control runoff and prevent erosion on access road work by using low grades, water bars, and drain dips.
- Properly space and size culverts on access roads.
- Use water trucks on an as-needed basis to minimize dust and reduce erosion due to wind.
- Till or ***scarify*** compacted soil at structure sites prior to reseeding.
- Reseed disturbed areas with a native seed mix as soon as work in that area is completed.
- Inspect reseeded and revegetated areas to verify adequate growth; implement contingency measures as needed.
- Conduct construction activities in coordination with agricultural activities to the extent practicable.
- Allow agricultural activities to resume on temporarily disturbed lands as soon as construction is complete.
- Stabilize permanently disturbed areas for new access roads with a top layer of pavement or gravel for the roadway and revegetate the roadway shoulders.
- Inspect and maintain facilities to ensure proper function and nominal erosion levels after construction.

3.2.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, construction would not take place at this time and, thus, no construction-related impacts would occur to geology or soils. Increases in the number of visits to repair deteriorating structures could lead to more erosion and compaction than is currently experienced, especially if repairs require access to portions of the line during wet or muddy conditions, resulting in impacts that would be low to moderate.

3.3 Vegetation

3.3.1 Affected Environment

General Vegetation

Vegetation is influenced by topography, climate, soils, and current and past human activities. The project area crosses two regional (Level III) ***ecoregions*** (Willamette Valley and Coast Range) and three local (Level IV) ecoregions (Prairie Terraces, Valley Foothills, and Mid-Coastal Sedimentary) (Omernik 1987). Patterns of vegetation, animal life, geology, soils, water quality,

prevailing climate, and land use delineate the ecoregions. Figure 3-3 depicts the relative distribution of each local ecoregion present in the project area.

Willamette Valley

Prairie Terraces

The Prairie Terraces ecoregion occupies ***fluvial*** terraces of the Willamette River and its tributaries. Historically, this ecoregion supported extensive prairies and oak savannas maintained by fire. Few prairie remnants persist today; most have been lost to urban expansion and conversion to agriculture. Prairie remnants within the project area exist between Eugene and Veneta and feature a mix of native and introduced species including tufted hairgrass (*Deschampsia cespitosa*), camas species (*Camassia leichtlinii* and *C. quamash)*, sedges (predominately *Carex densa*), and a diverse assemblage of non-native grasses. ***Grass*** seed and small grain production is common on the poor-draining soils that predominate the ecoregion. Streams often meander across the gentle topography of the area, creating fairly broad ***riparian*** zones dominated by Oregon ash (*Fraxinus latifolia*) and willows (*Salix* spp.).

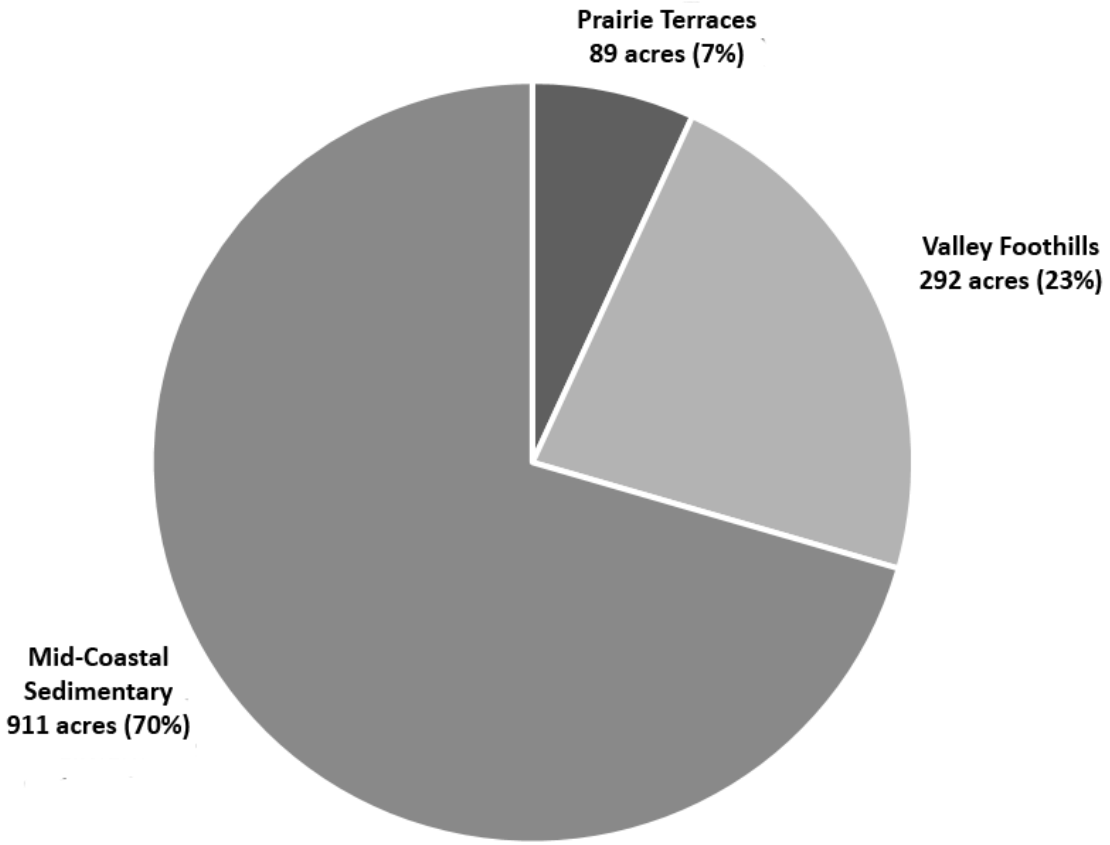

Figure 3-3. Proportion of Level IV Ecoregions within the Project Area

Valley Foothills

The Valley Foothills ecoregion is a transitional zone between the agricultural Willamette Valley and the more heavily forested Coast Range. Woodlands of Oregon white oak (*Quercus garryana*) and forests of Douglas-fir (*Pseudotsuga menziesii*) dominate vegetation in the Willamette Valley and Coast Range, respectively. Stands of ponderosa pine (*Pinus ponderosa*) are also scattered throughout the ecoregion. Openings in woodland habitat occasionally contain native prairie species including ookow (*Dichelostemma congestum*), Oregon sunshine (*Eriophyllum lanatum*), and California oatgrass (*Danthonia californica*). Land use in this ecoregion is mixed and includes rural residential development, grazing, and small-scale silviculture.

Coast Range

Mid-Coastal Sedimentary

Douglas-fir forests dominate the landscape in the mountainous Mid-Coastal Sedimentary ecoregion, which lies outside the coastal fog zone and is typically underlain by sandstone and siltstone. The Douglas-fir forests also support big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), golden chinkapin (*Chrysolepis chrysophylla*), Western hemlock *(Tsuga heterophylla),* and western redcedar (*Thuja plicata*). Recently-harvested areas often lead to dense shrub growth; shrubs include Pacific rhododendron (*Rhododendron macrophyllum*), salal (*Gaultheria shallon*), Coyotebush (*Baccharis pilularis*), snowbrush (*Ceanothus velutinus*), and Scot's broom (*Cytisus scoparius*). Riparian corridors are characterized by a mix of hardwood species and shade-tolerant shrubs such as salmonberry (*Rubus spectabilis*), Pacific ninebark (*Physocarpus capitatus*), and stink currant (*Ribes bracteosum*). The ecoregion's forests are managed for timber production and its larger river valleys and clearings feature a mix of residential areas, pastureland, and small-scale agriculture.

Common species within the ecoregions crossed by the Project Area are summarized in Table 3-3.

Table 3-3. Plant Communities with in the Project Area

Plant Community	Description
Wetland areas	Herbaceous wetlands with perennial herbaceous vegetation and woody wetlands forest or scrubland vegetation comprised of reed canarygrass *(Phalaris arundinacea)*, bentgrass species (*Agrostis* spp.), camas species, dense sedge, green-sheath sedge (*Carex feta*), tufted hairgrass, coyote thistle (*Eryngium petiolatum),* Puget gumweed (*Grindelia integrifolia*), lowland cudweed (*Gnaphalium palustre*), soft rush (*Juncus effusus*), plantain-leaf buttercup (*Ranunculus alismifolius*), foxtail species (*Alopecurus* spp.*),* cattails (*Typha latifolia*), clustered wild rose (*Rosa pisocarpa),* Nootka rose (*R. nutkana*), Pacific willow (*Salix lasiandra),* Sitka willow (*S. sitchensis*), red-osier dogwood (*Cornus sericea*), and Oregon ash
Riparian areas	Intermittent riparian communities comprised of Geyer's willow *(Salix geyeriana*), Pacific willow (*S. lasiandra*), red-osier dogwood, Oregon ash, Cusick's checker-mallow *(Sidalcea cusickii*), Douglas' hawthorn (*Crataegus douglasii*), black cottonwood (*Populus balsamifera*), clustered wild rose, Nootka rose (*Rosa nutkana*)
Evergreen forests	Evergreen coniferous forests young and old comprised of Douglas-fir, western hemlock, bigleaf maple, vine maple (*Acer circinatum*), rosy bird's-foot trefoil (*Hosackia rosea*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Berberis nervosa*), salal, white-flowered hawkweed (*Hieracium albiflorum*), round-leaf violet (*Viola orbiculata*), bald-hip rose *(Rosa gymnocarpa*)

Plant Community	Description
Mixed coniferous/deciduous forests	Mixed forests comprised of big-leaf maple, red alder, Oregon white oak, Douglas-fir, madrone, golden chinkapin, thimbleberry (*Rubus parviflora*), bracken fern, Scouler's willow (*Salix scouleriana*), fireweed (*Chamerion angustifolia*), Pacific waterleaf (*Hydrophyllum tenuipes*)
Agricultural/pastoral	Areas where crops are cultivated, and grasses, legumes are planted for livestock grazing, seed production, or hay crops; comprised of bentgrass species, tall fescue (*Schedonorus arundinaceus),* perennial ryegrass (*Lolium perenne*), red fescue *(Festuca rubra*), velvetgrass (*Holcus lanatus*), vetch species (*Vicia* spp.), thistle species (*Cirsium* spp.), Queen Anne's lace (*Daucus carota*), narrow goldenrod (*Solidago elongata*), one-seed hawthorn (*Crataegus monogyna*), Chilean tarweed (*Madia sativa*), St. John's wort, Himalayan blackberry (*Rubus armeniacus*), multi-flower rose (*Rosa multiflora*), clover species *(Trifolium* spp.)
Urban/developed	Areas cleared for commercial, industrial, or residential structures, with associated lawns, and parking lots; comprised of a mix of introduced and native plants in managed and unmanaged urban settings
Upland grassland/herbaceous	Grassland/herbaceous areas dominated by graminoids or herbaceous vegetation and not subject to intensive management such as tilling, but can be utilized for grazing; comprised of California oat-grass, Oregon sunshine, Rose checker-mallow (*Sidalcea virgata*), dense-head sedge (*Carex pachystachya*), foothill sedge (*C. tumulicola*), slender rush (*Juncus tenuis*), cut-leaf microseris (*Microseris laciniata*), Idaho blue-eyed grass (*Sisyrinchium idahoense*), bracken fern (*Pteridium aquilinum*), bentgrass species, slim-leaf onion *(Allium amplectens*)

Sources: 2014 aerial photographs from the National Agricultural Imagery Program (NRCS 2014); U.S. Geological Service National Land Cover Data (Fry et al. 2011); Oregon Flora Atlas (Oregon Flora Project 2014); 2011 and 2014 field observations (Turnstone 2011; Turnstone 2014).

Special-status Plant Species

Special-status plant species have been identified for protection and/or management under federal or state laws or other mandates. Of the ***special-status species*** known to occur in Lane County, 14 species have the potential to occur within the project area (Table 3-4).

Table 3-4. Special-status Species Potentially Occurring within Project Area

Scientific Name	Common Name	Federal Status	State Status
Botrychium crenulatum	Crenulate grape fern	SOC	C
Castilleja rupicola	Cliff paintbrush	SOC	-
Delphinium oreganum	Willamette Valley larkspur	SOC	C
Delphinium pavonaceum	Peacock larkspur	SOC	E
Erigeron decumbens var. decumbens	Willamette daisy	E	E
Eucephalus vialis	Wayside aster	SOC	T
Horkelia congesta ssp. congesta	Shaggy Horkelia	SOC	C
Lathyrus holochlorus	Thin-leaved peavine	SOC	-
Limbella fryei	Frye's Limbella	SOC	C
Lomatium bradshawii	Bradshaw's desert parsley	E	E
Lupinus sulphureus ssp. kincaidii (L. oreganus)	Kincaid's lupine	T	T
Sericocarpus rigidus	Whitetop aster	SOC	T
Sidalcea hendersonii	Henderson's checker-mallow	SOC	-
Sisyrinchium hitchcockii	Hitchcock's blue-eyed grass	SOC	C

Note: C = candidate; E = endangered; SOC = species of concern; T = threatened

None of the 14 special-status species were found within the project area during surveys of areas that would have the potential for these species. Surveys were conducted in the transmission line right-of-way and new access road areas by qualified botanists during the appropriate flowering periods in 2011, and documented in the *Lane-Wendson Transmission Line Rebuild Threatened and Endangered Plant Species and Fender's Blue Butterfly Nectar Species Survey* (Turnstone 2011). Additional surveys were performed in 2014 within prairie habitat for federally-listed threatened or endangered plant species—Kincaid's lupine, Willamette daisy, and Bradshaw's lomatium—none of the species were detected (see further discussions below regarding potential presence and surveys for these species).

Potential presence in the project area was determined by conducting plant surveys and reviewing the Oregon Biodiversity Database (ORBIC) for records of special-status species occurring within two miles of the transmission line (ORBIC 2015). Federally-listed plant species that occur in Lane County include Willamette daisy (*Erigeron decumbens* var. *decumbens)*, Bradshaw's desert parsley (*Lomatium bradshawii*), and Kincaid's lupine (*Lupinus sulphureus ssp. kincaidii*). All of these three federally-listed species are confirmed to occur within one mile of the project area.

Willamette Daisy

The Willamette daisy is a ***perennial*** herb belonging to the sunflower family (*Asteraceae*). ***Endemic*** to the Willamette Valley, the Willamette daisy relies on early ***seral*** upland and wetland prairie habitats featuring low-growing vegetation which lacks dense canopy cover. Loss of historic habitat to agricultural and residential development is cited as the primary reason for its endangered status (U.S. Fish and Wildlife Service [USFWS] 2010c). No designated ***critical habitat*** for Willamette Daisy overlaps the project area; moreover, the nearest critical habitat occurs approximately 0.3 mile from the project area.

Multiple subpopulations of Willamette daisy occur near Coyote Creek and along the north side of Nielson Road near the project area and near the Lane Substation (ORBIC 2015). Surveys for Willamette daisy and other Endangered Species Act (ESA)-listed plant species were conducted in June 2011 within the transmission line right-of-way and did not detect any Willamette daisy populations (Turnstone 2011). Plant surveys were also conducted during the Willamette daisy flowering window in 2014 along access roads and any other areas located outside of the right-of-way where ground-disturbing activities would occur (Turnstone 2014). No new occurrences of Willamette daisy were observed during either visit.

Bradshaw's Desert Parsley

Bradshaw's desert parsley (*Lomatium bradshawii*) is a perennial member of the carrot family (*Apiaceae*). Once regarded as endemic to the Willamette Valley, additional populations of Bradshaw's desert parsley were located in Clark County, Washington, in 1994. Exhibiting a narrow preference for habitat, Bradshaw's desert parsley is restricted to wet prairie environments. The majority of extant populations occur along seasonally inundated or

saturated margins of waterways, typically growing in poor-draining clay soils. Bradshaw's desert parsley does not have designated critical habitat.

Multiple subpopulations of Bradshaw's desert parsley occur near Coyote Creek and along the north side of Neilson Road opposite the Lane Substation (ORBIC 2015). These populations are associated with open tufted hairgrass, Hall's aster *(Aster hallii),* and Oregon coyote-thistle *(Eryngium petiolatum).* Plant surveys were conducted during the Bradshaw's desert parsley flowering window in 2014 along access roads and within the right-of-way in wet prairie environments; no new populations were observed (Turnstone 2014).

Kincaid's Lupine

A perennial member of the pea family (*Fabaceae*), Kincaid's lupine (*Lupinus sulphureus* var. *kincaidii* [*L. oreganus*]) occurs between southwestern Washington's Lewis County and southwest Oregon's Douglas County. Kincaid's lupine is mostly found in upland prairie sites, generally on undisturbed, well-drained soils. In Douglas County, Kincaid's lupine grows in more shaded areas, occupying tracts dominated by trees and shrubs. Kincaid's lupine critical habitat was designated in October 2006. No designated critical habitat is located within the project area; the nearest critical habitat occurs approximately 0.9 mile from the project area.

Kincaid's lupine populations occur within upland grasslands north of the Lane Substation, approximately 100 feet outside the project area (ORBIC 2015). Plant surveys for Kincaid's lupine and other ESA-listed species were conducted in June 2011 within the project area and did not find any Kincaid's lupine populations (Turnstone 2011). Plant surveys were also conducted during the Kincaid lupine's flowering window in 2014 along access roads and any other areas located outside of the right-of-way where ground-disturbing activities would occur (Turnstone 2014). No instances of Kincaid's lupine were observed.

Invasive Plants

Noxious weeds are non-native plants designated as undesirable plants by federal and state laws. Noxious weeds displace native species, decrease plant species diversity, degrade habitat for rare species and wildlife, decrease productivity of farms, rangelands, and forests, create unattractive areas dominated by single species, and impair full use of the landscape by wildlife and humans. The Oregon Department of Agriculture (ODA) divides noxious weeds into categories A, B, and T:

- A-list designated weeds are weeds of known economic importance that occur in the state in small enough infestations to make eradication or containment possible. The recommended action for infestations is eradication or intensive control when and where found.
- B-list designated weeds are weeds of economic importance that are regionally abundant but may have limited distribution in some counties. Recommended control actions are limited to intensive control at the state, county, or regional level as determined on a site-specific, case-by-case basis.
- T-list designated weeds are priority species for prevention and control by the Noxious Weed Control Program because they pose an economic threat to Oregon.

Several conspicuous ***invasive plants*** are not listed officially by the ODA, including foxglove (*Digitalis purpurea*), fuller's teasel (*Dipsaucus fullonum*), cut-leaf blackberry (*Rubus laciniatus*), and sweetclover (*Melilotus officinalis*). These unlisted plants can displace native species and reduce the productivity of forest and farmland. ODA recommends that land managers treat the above species as they would B-list noxious weeds, controlling existing populations and reducing the spread of seeds and ***propagules***.

BLM tracks infestations of noxious and invasive weeds to aid in prevention and control of establishment and spread. The BLM database shows several populations of noxious weeds occurring within the project area (Table 3-5).

Table 3-5. Noxious Weeds Known to Occur within the Project Area

Species	Common Name	List	Description and Distribution
Brachypodium sylvaticum	Slender false brome	B	Perennial grass; invasive in foothill clearings and forests
Centaurea stoebe	Spotted knapweed	B	Tap-rooted biennial (occasionally annual or perennial); can dominated fallow fields, upland grasslands and roadsides
Cirsium arvense	Canada thistle	B	Invasive in a variety of habitats; like other members of its family, seeds spread far on the wind
Cirsium vulgare	Bull thistle	B	Biennial thistle with large flower head; observed commonly throughout the project area
Cytisus scoparius	Scot's broom	B	Perennial shrub; common on logged areas, abandoned lots and roadsides; modifies soil chemistry and can preclude or inhibit the restoration of prairie sites; common in project area
Geranium robertianum	Herb Robert	B	Biennial, ill-smelling plant that grows in a variety of habitats in partial shade
Hypericum perforatum	St. John's wort	B	Aggressive weed of open habitats, spreading by rhizomes to form large patches; commonly observed in project area
Fallopia japonica	Japanese knotweed	B	Weed of large stature, spreading by thick, jointed rootstocks; difficult to control, the plant can totally choke out native vegetation, especially in riparian areas
Rubus armeniacus	Himalayan blackberry	B	The heavily-thorned, arching canes of Himalayan blackberry can quickly take over a variety of low to middle elevation habitats; seeds are spread far and wide by birds; commonly observed in project area.
Senecio jacobea	Tansy ragwort	B, T	Poisonous to livestock, tansy ragwort is a serious pest in pastures and agricultural areas.

Source: ODA 2014
Note: To determine the extent of A-, B-, and T-list noxious weed infestation within the project area, a noxious weed survey of the project area would be conducted prior to construction.

3.3.2 Environmental Consequences—Proposed Action

General Vegetation

Construction impacts would be generally associated with tree and vegetation clearing, soil compaction, and invasive plant spread. Tree removal has the potential to increase available sunlight, water and nutrients, increase temperature variability, and alter the age structure of the

adjacent riparian and forested communities. Removal of trees would be spread over the length of the transmission line; however, the potential to alter adjacent vegetation communities is moderate. Given the density of vegetation in the areas, it would be expected that tree/shrubs would quickly revegetate in places other than roads and the transmission line right-of-way. Residual dormant seeds in the soil would also contribute to subsequent shrub and tree recruitment and disturbed site revegetation. Within the remnant prairie, native wetland, and riparian zones, construction activities would include clearing or crushing vegetation in order to replace wood-poles and associated hardware, such as guy wires and guy wire anchors. Vegetation would be removed along the margins of the existing access roads and at the base of structures to aid in construction and safe operation of the line. A summary of vegetation removal planned under the Proposed Action is described in Section 2.1.6.

Additional impacts could occur from the use of heavy equipment on local soils, including compaction and physical movement of soils. Compaction of soils could prevent precipitation from infiltrating plant root zones. Decreases in groundcover from vegetation removal could cause increases in erosion during storm events and correspondingly less infiltration to support remaining plant communities. Compaction could also inhibit germination of seeds in the upper soil horizon, favor the development of bare-soil areas, or foster compaction-tolerant annual grass and ***forb*** species, many of which are invasive.

Soil disturbance resulting from construction could eliminate plant cover and change the ability of some plant communities to reestablish. Areas cleared of vegetation could be overtaken by non-native species, including invasive and noxious weeds, which could preclude growth of native vegetation.

Plant communities in the project area have already been significantly altered from historical conditions due to the original clearing on BPA's right-of-way and ongoing operations and maintenance activities. The effects of the Proposed Action on additional soil disturbance and plant cover changes would be reduced or avoided through a variety of BMPs and environmental design features described later in this section; therefore, impacts to upland grassland/herbaceous, wetland, urban/developed, and agricultural/pastoral plant communities would be low. The disturbance to common plant species in the immediate vicinity of construction in areas other than roads and the transmission line right-of-way would be temporary and those temporary effects would be minimized through planning and implementation of these BMPs.

Potential accidental spills of hazardous materials (e.g., hydraulic fluids, petroleum products) that would be used during construction could result in vegetation impacts including mortality, reduced viability for some species, and reduced potential for successful revegetation within spill areas. Because potential spills would be small and localized, and BMPs would be implemented to reduce the possibility of spills affecting vegetation, the impact to general vegetation would be low.

Special-status Plant Species

All three of the federally-listed vascular plant species that occur in or near project area are imperiled primarily due to losses in prairie habitat. Once common in the Willamette Valley,

prairie habitats have been eliminated in 99 percent of their historic range (ODFW 2006). There would be no impact to remnant prairie habitat, ESA-listed plants, or other special-status species because none are known to occur within the project area and no new populations were found during plant surveys.

Invasive Plants

Construction could disrupt and disturb vegetation and relocate soils, increasing potential for the spread of noxious weeds and other invasive plants. Invasive plants could colonize road edges disturbed by improvement activities, and vehicles or materials transported to and within the project area could inadvertently transport seeds or propagules. If conditions are appropriate, these species could take advantage of disturbed soils and the lack of competing vegetation in recently cleared areas and establish new populations.

Removal of vegetation would be limited to that which would directly interfere with proposed construction activities and safe operation of the transmission line, thereby minimizing disturbance and disturbance-related impacts. BPA would use appropriate BMPs, including revegetating all disturbed areas following construction.

3.3.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to vegetation from the Proposed Action:

General Vegetation

- Use existing road systems, where practicable, to access structure locations.
- Minimize the construction area (footprint) and disturbance to vegetation to the extent practicable, especially within wetlands and adjacent waterbody crossings; only remove vegetation that would interfere with the Proposed Action.
- In or near sensitive areas, place materials storage and staging areas in previously disturbed areas away from wetlands/waterbodies.
- Conduct as much work as possible during the dry season when stream flow, rainfall, and runoff are low to minimize erosion, sedimentation, and soil compaction.
- Cut and remove trees identified for removal during the dry season to minimize soil compaction. Conduct tree removal in a manner that minimizes disruption to remaining trees and shrubs.
- Do not disturb existing root system of trees by "tipping over."
- Use a ***feller buncher*** (where access allows), a "cable and winch" removal approach, or equivalent method to limit damage to remaining trees and understory vegetation during tree removal in sensitive areas.
- Revegetate disturbed areas with native grasses and forbs to ensure appropriate vegetation coverage and soil stabilization prior to rainy season (November 1).

- Restore all temporarily disturbed soils according to requirements in the USFWS and National Oceanic and Atmospheric Administration (NOAA) Fisheries biological opinions for this project (USFWS 2015; NOAA 2016 [pending]), to minimize adverse impacts to vegetation.
- Conduct post-construction site restoration monitoring until site stabilization is achieved.

Special-status Plant Species

- There are no documented populations of special-status plant species within the project area; however, if new populations of special-status plant species are discovered prior to project implementation, then the following recommendations would be executed for avoiding and minimizing impacts:
  - Salvage special-status species where possible and replant after construction.
  - Restrict equipment access to wood-pole structures near the populations.

Invasive Plants

- Prior to construction, conduct an invasive plant survey within the project area to more specifically identify existing infestations of invasive plants.
- Prior to construction, visit existing noxious weed infestations and conduct preemptive measures to minimize transport and expansion of weed occurrences during construction; flag infestations for avoidance (as practicable) during construction. Where practicable, treat noxious weeds adjacent to access roads and structure sites. Perform follow-up monitoring and treat infestation areas after construction if needed. BPA would not apply herbicides on BLM Eugene District lands.
- Minimize ground disturbance in proximity to existing invasive plant populations.
- Implement appropriate measures to minimize the introduction and broadcast of weed seeds/propagules, including inspection of vehicles before entering construction areas, installation and use of weed wash stations at selected locations along the transmission line right-of-way, and other appropriate equipment cleaning measures.

3.3.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, impacts to vegetation due to construction and associated access road work activities would not occur. However, the ongoing operation and maintenance of the existing structures and access roads would still occur, likely on a more frequent basis as structures deteriorate. Crop damage, soil disturbance, and temporary access road creation for routine or emergency maintenance activities could result in short-term impacts similar to the Proposed Action. Furthermore, emergency repairs may occur during winter and transport of materials and supplies could result in damage to vegetation. In addition, emergency repair activities could require movement of personnel, materials, and vehicles through existing noxious weed infestations that could allow the spread of weeds to other areas.

3.4 Streams and Fish

3.4.1 Affected Environment

Streams

The project area lies within two watershed subbasins: Upper Willamette and Siuslaw River (Figure 3-4). The project area crosses approximately 29 streams, rivers, or their tributaries or headwaters, including Coyote Creek, Noti Creek, Warden Creek, Kirk Creek, Rock Creek, Wildcat Creek, Turner Creek, Knowles Creek, Park Creek, and the Siuslaw River.

Upper Willamette Subbasin

The Upper Willamette Subbasin is located in the southern and central portion of the Willamette Basin. The Upper Willamette River drains into the Willamette River through many tributaries; the closest to the project area is the Long Tom River. The subbasin's 1,197,000 acres are mostly in Lane, Linn, Benton, and Polk Counties and include six watersheds, one of which is crossed by the project area: Long Tom River. Forty-five percent of the subbasin is forestland and 39 percent is grassland, pastureland, and hayland. The remaining land supports orchards, vineyards, nursery stock, berries, and development. Nine percent of land in the subbasin is publically-owned (NRCS 2006).

Siuslaw River Subbasin

The Siuslaw River Subbasin is the southern-most subbasin of the North Coast watershed. The subbasin's 493,400 acres are mostly in Lane County and include eight watersheds, two of which are crossed by the project area: Wildcat Creek (and Lower Siuslaw River. Ninety five (95) percent of the subbasin is forestland and more than one-half of that is publicly-owned. The remainder of the subbasin is hayland and pastureland typically managed in small acreage farms (NRCS 2005).

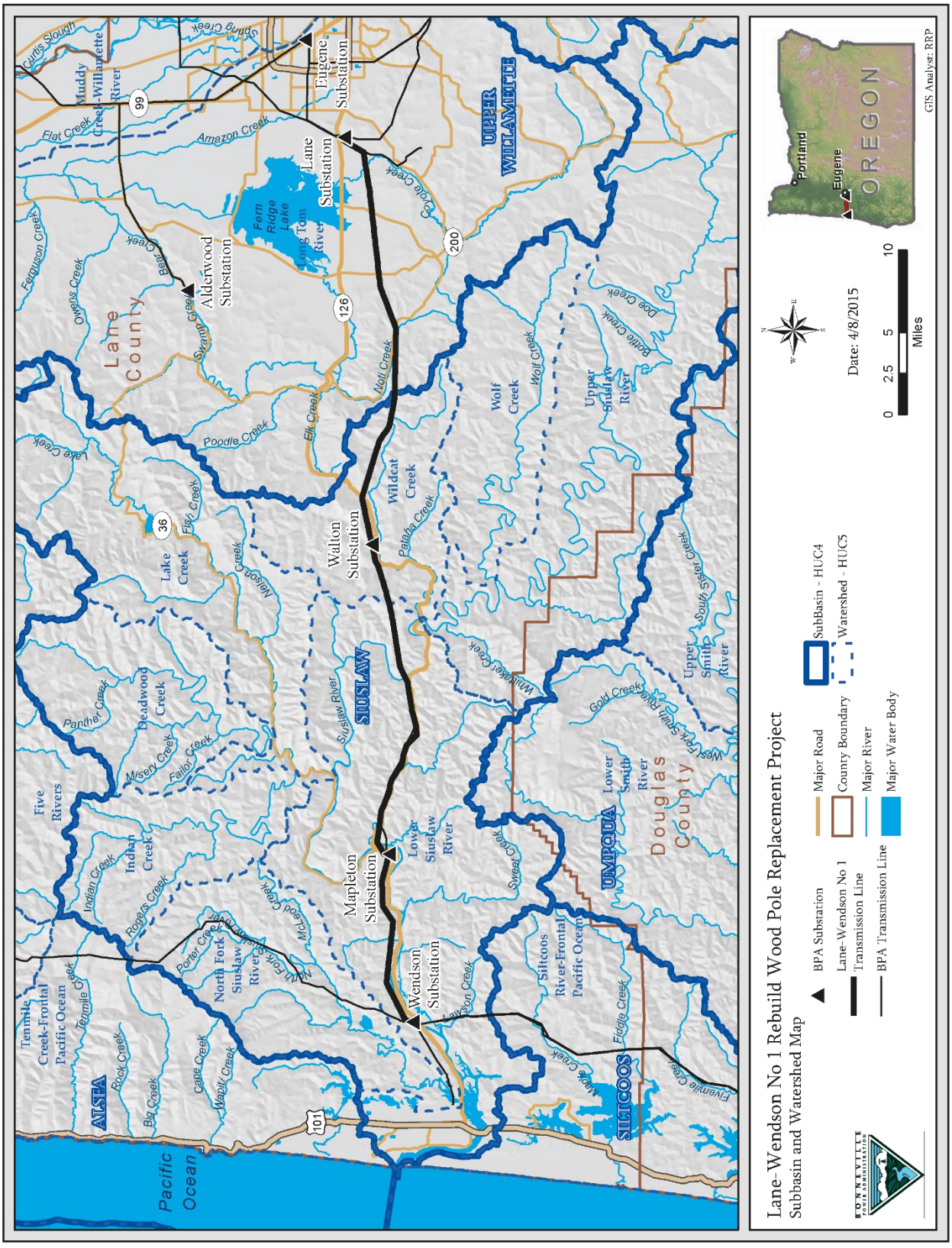

Figure 3-4. Watershed Subbasins Intersected by the Project Area

Table 3-6, Table 3-7, and Table 3-8 list each named stream by subbasin and HUC crossed by the project area; however, given pole and access road placement as well as line spans, impacts to most named drainages are avoided.

Table 3-6. Named Streams Crossed by the Project Area in the Upper Willamette Subbasin, Long Tom River Watershed

Streams within the Long Tom River Watershed* Line Miles 1 – 13	Next Named Waterbody Downstream	Nearest Structure(s)	Activity	In-Water Work Activities
Coyote Creek	Fern Ridge Reservoir	3/1 – 3/2	Transmission line spans drainage	No in-water work required
Middle Fork Coyote Creek	Fern Ridge Reservoir	4/6 – 4/7	Transmission line spans drainage	In-water work required; Replace ford with culvert
Job Swale Creek	Middle Fork Coyote Creek	5/6 – 5/7	Transmission line spans drainage	No in-water work required
West Fork Coyote Creek	Fern Ridge Reservoir	6/6 – 7/1	Transmission line spans drainage	In-water work required; Replace existing culvert
Noti Creek/Noel Creek	Long Tom River	10/5 – 10/6	Transmission line spans drainage	No in-water work required
Hardy Creek	Long Tom River	11/9 – 12/1	Transmission line spans drainage	No in-water work required

*Limited stream survey/fish survey data exist for some of these named streams and their tributaries; however, potential fish species in the Long Tom River and tributaries may include Cutthroat trout, Mountain whitefish, Pacific and Brook lamprey, multiple Dace, Sculpin, and Sucker species, Sand roller, Northern pikeminnow, Redside shiner, Threespine stickleback, as well as other introduced warmwater species including but not limited to Catfish, Bullhead, Mosquitofish, Carp, Large and Smallmouth bass, several species of Crappie (Long Tom Watershed Council 2000).

Table 3-7. Named Streams Crossed by the Project Area in the Siuslaw Subbasin, Wildcat Creek Watershed

Streams within the Wildcat Creek Watershed* Line Miles 13 – 22	Next Named Waterbody Downstream	Nearest Structure(s)	Activity	In-Water Work Activities
Salt Creek	Wildcat Creek	15/6 – 15/7	Transmission line spans drainage	No in-water work required
Fish Creek	Wildcat Creek	17/5 – 17/6	Transmission line spans drainage	No in-water work required
Chickahominy Creek	Wildcat Creek	19/11 – 20/1	Transmission line spans drainage	No in-water work required
Walker Creek	Wildcat Creek	20/11 – 21/1	Transmission line spans drainage	No in-water work required
Kirk Creek	Wildcat Creek	21/4 – 21/5	Transmission line spans drainage	No in-water work required
Schultz Creek	Wildcat Creek	22/4 – 22/5	Transmission line spans drainage	No in-water work required

*Limited stream survey/fish survey data exist for some of these named streams and their tributaries; however, potential fish species in Wildcat Creek tributaries may include but are not limited to Oregon Coast (OC) Coho, Fall Chinook, Winter Steelhead, Cutthroat trout, Pacific and Brook lamprey, Redside shiner, as well as multiple Dace, Sculpin, and Sucker species (Siuslaw Basin Council 2002; Spangler 2013).

Table 3-8. Named Streams Crossed by the Project Area in the Siuslaw Subbasin, Lower Siuslaw River Watershed

Streams within the Lower Siuslaw River Watershed* Line Miles 22 – 42	Next Named Waterbody Downstream	Nearest Structure(s)	Activity	In-Water Work Activities
Rock Creek	Siuslaw River	25/1 – 25/2	Transmission line spans drainage	In-water work required; Replace existing ford with bridge
Schoolhouse Creek[1]	Siuslaw River	25/4 – 25/5	Transmission line spans multiple crossings of drainage	25/4 – 25/5: In-water work required; Replace existing culvert
Siuslaw River	Pacific Ocean	25/6 – 26/1 33/6 – 33/7	Transmission line spans multiple crossings of drainage	No in-water work required
Turner Creek	Siuslaw River	28/4 – 28/5	Transmission line spans drainage	No in-water work required
Bridge Creek	Siuslaw River	29/4 – 29/5	Transmission line spans drainage	No in-water work required
Knowles Creek	Siuslaw River	30/5 – 32/1	Transmission line spans drainage	In-water work required; Install temporary construction bridge at existing ford crossing
Rice Creek	Siuslaw River	33/10	Transmission line spans drainage	No in-water work required
Park Creek	Siuslaw River	34/2 – 34/4	Transmission line spans drainage	In-water work required; Replace existing culvert
Saunders Creek	Siuslaw River	36/3 – 36/4	Transmission line spans drainage	No in-water work required
Neilson Creek	Siuslaw River	36/5 – 36/6	Transmission line spans drainage	No in-water work required
David Creek	Siuslaw River	37/5 – 38/1	Transmission line spans drainage	No in-water work required
Hanson Creek	Siuslaw River	39/3 – 39/4	Transmission line spans drainage	In-water work required; Replace existing bridge and stabilize banks
Whiskey Creek	Hanson Creek	39/4 – 39/6	Transmission line spans drainage	In-water work required; Replace existing culvert
Schoolhouse Creek[1]	Siuslaw River	39/6 – 40/1	Transmission line spans drainage	No in-water work required
Horseshoe Creek	Siuslaw River	40/3 – 40/4	Transmission line spans drainage	No in-water work required
Olsen Creek	Siuslaw River	40/5 – 40/6	Transmission line spans drainage	No in-water work required

[1]Two separate creeks are named Schoolhouse Creek that are crossed by the project area within the Lower Siuslaw River Watershed.
*Limited stream survey/fish survey data exist for some of these named streams and their tributaries; however, potential fish species in Siuslaw River tributaries may include but are not limited to Oregon Coast (OC) Coho, Fall Chinook, Winter Steelhead, Cutthroat trout, Pacific and Brook lamprey, Redside shiner, as well as multiple Dace, Sculpin, and Sucker species (Siuslaw Basin Council 2002; Spangler 2013).

Water Quality

Neither subbasin meets Oregon Department of Environmental Quality's (DEQ) water standards for all factors, which results in listing on the DEQ's ***303(d), water quality limited waters*** (303[d]) list. Table 3-9 lists the standards not met by each subbasin.

DEQ established the Willamette Basin total maximum daily loads (TMDLs) for temperature, bacteria, and mercury, and the US Environmental Protection Agency (EPA) approved the TMDLs in September 2006. These TMDLs include temperature, bacteria, and mercury loads specific to the Upper Willamette Subbasin. In addition, DEQ defined two additional TMDLs in the Upper Willamette Subbasin: dissolved oxygen for Amazon Diversion Channel and Coyote Creek and turbidity for Fern Ridge Reservoir. DEQ has not established TMDLs for the Siuslaw River subbasin.

Table 3-9. Subbasins and Waterbodies crossed by the Project Area with Water Quality Limited Parameters

Subbasin and Waterbody	Water Quality Limited Parameters	Established TMDLs
Upper Willamette River Subbasin Coyote Creek	Temperature, dissolved oxygen, and E. coli	Temperature, bacteria, mercury, and dissolved oxygen
Siuslaw River Subbasin Siuslaw River	Temperature, dissolved oxygen, biological criteria, and fecal coliform	None

Source: DEQ 2010.

Fish

The affected environment for fish includes the riparian and aquatic areas that provide habitat for fish species that may be directly or indirectly affected by the Proposed Action. Information on fish presence in streams that may be impacted by the Proposed Action was obtained from published literature, StreamNet databases, and discussions with biologists from NOAA National Marine Fisheries Service (NMFS) and ODFW. Field investigations were also conducted to verify habitat conditions.

Fish species occurring in streams within the project area that may be impacted by the Proposed Action include Oregon Coast coho salmon (*Oncorhynchus kisutch*), steelhead trout (*O. mykiss*), cutthroat trout (*O. clarki clarki*), Oregon chub (*Oregonichthys crameri*), Pacific lamprey (*Entosphenus tridentatus*), brook lamprey (*Lampetra richardsonii*), resident rainbow trout (*Oncorhynchus mykiss*), and a variety of other common native and introduced fish species, including warm-water species. Oregon Coast coho salmon is the only ESA-listed fish species that occurs within streams that may be impacted by the Proposed Action. However, fish presence in the project area is often precluded by natural barriers (e.g., steep slopes, waterfalls).

Threatened, Endangered, Candidate, and Special-status Fish Species

Oregon Coast Coho salmon (Oncorhynchus kisutch)

The Oregon coast coho ***Evolutionarily Significant Unit (ESU)*** was reaffirmed as threatened under the ESA on June 20, 2011 (76 Fed. Reg. 35755). Critical habitat was designated on

February 11, 2008 (73 Fed. Reg. 7816). The Oregon Coast coho ESU includes all naturally spawned populations of coho salmon in Oregon coastal streams south of the Columbia River and north of Cape Blanco (Sixes River). Along most streams, the proximity of Oregon Coast coho to the project area is not precisely known given limited survey data. Fish passage barriers, both natural (steep gradients and low water flow) and human-made (impassable culverts), exist throughout the project area, preventing Oregon coast coho use of some reaches. BPA relied on current and historical fish distribution data from ODFW, Oregon Department of Forestry (ODF), and NMFS, as well as meetings and site visits with staff from these agencies, to determine Oregon Coast coho presence including in areas with little or no survey data (Farrand 2013 to 2015; Spangler 2013 to 2015; Young 2013 to 2014).

Designated critical habitat for Oregon coast coho consists of the water, substrate, and adjacent riparian zone reaches, including off-channel habitats below longstanding, naturally impassable barriers such as natural waterfalls in existence for at least several hundred years. The ***primary constituent elements*** of critical habitat are biological or physical habitat features essential for the conservation of the ESU (73 Fed. Reg. 7816). The primary constituent elements that may be present within the project area include: freshwater spawning sites that support spawning, incubation, and larval development; freshwater rearing sites that enable juvenile salmon to forage, grow, and develop; and, freshwater migration corridors that enable fish to successfully avoid predators and swim upstream to reach spawning areas on limited energy stores.

BPA is currently in consultation with NMFS to identify potential impacts to ESA-listed fish species, identify any needed minimization or mitigation measures to reduce adverse effects to these species, and to obtain an incidental ***take*** statement.

Pacific lamprey (Entosphenus tridentatus)

The Pacific lamprey is a federal ***species of concern*** and is an ***Oregon State Sensitive Species***. Pacific lamprey is an ***anadromous*** species with habitat and spawning requirements similar to ***salmonids***. Pacific lamprey are also present in many project streams. For additional information on the life history of the Pacific lamprey, refer to BMPs for the Pacific Lamprey (USFWS 2010a), which to the extent practicable have been incorporated into the into the project's mitigation measures.

3.4.2 Environmental Consequences—Proposed Action

Streams

In general, vegetation removal and soil disturbance from the Proposed Action could increase the rates of wind and water erosion, resulting in sediment deposition directly into surface water and increased turbidity. Five structures that would be replaced and 3.6 miles of access roads that would be improved or reconstructed are located within 100 feet of named waterways where increased erosion and subsequent runoff could occur.

The amount of fine sediment introduced to streams during road work would be similar to natural erosion processes during the dry season because there would be little or no flowing water on road surfaces. Traffic on gravel roads during the wet season has the largest potential to deliver sediment to stream channels. However, the design features and mitigation measures

described in Section 3.4.3 would minimize turbidity and sediment runoff into streams from construction activities. Further, erosion rates would likely return to their current levels once vegetation is reestablished.

Runoff from eroded soils and the subsequent decrease in water quality in nearby streams would depend on the timing of construction, weather conditions, local topography, the erosion potential of soils, and the effectiveness of BMPs implemented during construction to minimize soil erosion. Since most of the construction work would be performed in the summer and early fall, rainfall amounts from storms during that period would be expected to be small and would result in low or limited erosion of soil.

Erosion of soil from excavation of existing structure holes would be expected to be low because any soil that is not used to refill the structure hole would be disposed of in upland areas away from waterbodies, and all disturbed soils would be seeded to facilitate site restoration. With structure placement in upland areas, typically well away from streams, and improvement of existing access roads, potential erosion and sedimentation impacts to most named drainages would be avoided in the project area. However, culvert replacement and associated road work would affect some drainages. Culvert, bridge, and ford installation and replacement could temporarily disturb bank soils and streamside vegetation, which could result in eroded soils entering streams. Trees and other vegetation would need to be removed around culvert, bridge, and ford installation and replacement areas.

Other than sedimentation from temporary erosion, the Proposed Action would not be expected to contribute to impaired water quality for the parameters identified in Table 3-9. No materials containing metals, fecal coliform, fertilizers, or elevated temperatures would be discharged as part of the Proposed Action, and the Proposed Action would not affect dissolved oxygen levels or contribute to nitrogen, or phosphate, or algae. The installation of culverts, including fish-passable culverts, and bridges would restore more natural stream flows and would provide localized habitat improvements. With implementation of erosion control measures described in Section 3.4.3, the amount of sedimentation potentially entering streams would be low and the Proposed Action would not inhibit any water quality recovery efforts on streams intersected by the project area.

Potential impacts to surface water quality resulting from accidental oil or fuel spills into streams from construction equipment used adjacent to streams would be low because BMPs, including setback distances for fueling and staging areas from waterbodies to minimize spills, would be implemented.

Tree removal would have little to no temperature impact on streams with TMDL limits for temperature. Removal of danger trees, trees within the right-of-way, and trees for access road work throughout the project area is unlikely to reduce stream shading because most or all tree removal would not be immediately adjacent to streams. Less than 5 danger trees and trees within the right-of-way (less than one percent of all tree removal) would be removed adjacent to streams. Furthermore, removal of danger trees and trees within the right-of-way would focus on the mature trees and not the understory, thus the ground surface would remain intact and post-removal site runoff would not be expected to increase from existing conditions. In addition,

tree stumps would remain in place (unless otherwise requested on privately owned land) after tree removal and further minimize ground disturbance. Mitigation in the form of riparian plantings at selected bridge, ford, and culvert replacement sites could eventually increase shading and help to offset potential temperature impacts to habitat.

Overall, impacts to surface water quality from the Proposed Action would be low.

Fish

Pursuant to the requirements of Section 7(c) of the ESA, a biological assessment that addresses project effects on listed fish species and their designated critical habitat is being prepared, and BPA is currently in consultation with the NMFS.

Construction impacts to fish include possible increased sedimentation to streams, which could cause disturbances to or elimination of habitat, and direct disturbances to individual fish such as displacement from their habitat or mortality. Additionally, localized increases in turbidity, erosion, and sedimentation could negatively affect fish due to loss of habitat and available food. The extent of the impact would depend upon the fish species present at the time of construction and the level of disturbance to their habitat, as most drainages would be dry during construction. Changes in riparian vegetation that affect shade, cover, and recruitment of wood into streams also have the potential to affect fish and fish habitat.

Increases in stream water temperatures could result from vegetation removal, which could reduce habitat quality (causing fish to leave the habitat) and alter food availability; however, only approximately 247 trees would be removed within 150 feet of mapped streams (including higher gradient non fish-bearing drainages) in the project area. These removals are located in three watersheds (5th Field HUCs) in the project area as follows: 17 removals within the Long Tom River Watershed (line miles 1 - 13); 68 within the Wildcat Creek Watershed (line miles 14 - 23); and 162 within the Lower Siuslaw River Watershed (line miles 24 - 42). During construction, vegetation removal would also be minimized, and riparian areas would be restored and replanted with native plants. When practicable in riparian areas, tree roots would be left in place to maintain soil stability and allow for resprouting, while felled trees would be left within riparian areas to provide habitat. This very minor reduction in potential shading combined with the limited hydraulic residence time within the project area indicate stream water temperature increases are unlikely to result from the proposed tree removal, particularly given the small number of trees and proposed site restoration measures. Additionally, improved access road conditions and drainage features would facilitate more natural infiltration and sediment trapping functions providing associated temperature and water quality benefits to fish by reducing direct runoff from access roads into streams.

Although Oregon Coast coho and other fish species may be present within various streams intersected by the project area, most structure-replacement activities would occur away from streams where both topography and existing vegetation would reduce the ability of sediment to enter nearby streams. However, some in-water work would be required for access road construction, reconstruction, and improvements, as well as for several culvert and bridge installations. Equipment moving across a stream could disturb the substrate and release sediments or result in compaction, disturbing nearby fish and reducing an area's ability to

support vegetation after construction. Fish salvage activities (removing fish from in-water work/construction areas) could also harm or harass fish, and petroleum fuel products, hydraulic oil and other hazardous materials typically associated with construction activities could enter a stream, causing fish kills, aquatic invertebrate kills and death or injury to a number of other species that fish depend on for food. In-water work on fish-bearing streams within the project area are summarized in Table 3-10.

Table 3-10. Proposed In-water Work on Fish-bearing Streams[1]

Structure ID[2]	Work Proposed	Stream	Potential ESA Fish Present	In-water Work	Fish Salvage Likely Required
C-003-060	Replace ford with culvert	Small unnamed trib. to Coyote Creek/Fern Ridge Reservoir	No	Yes	Yes (if not dry)
C-004-050	Replace ford with culvert	Small unnamed trib. to Middle Fork Coyote Creek	No	Yes	Yes (if not dry)
C-004-060	Replace ford with culvert	Middle Fork Coyote Creek	No	Yes	Yes (if not dry)
C-007-020	Install culvert	Small unnamed drainage to West Fork Coyote Creek	No	Yes	Yes (if not dry)
C-007-031	Replace culvert	West Fork Coyote Creek	No	Yes	Yes (if not dry)
C-11-040	Replace culvert	Small unnamed trib. to Noti Creek/Reservoir	No	Yes	Yes (if not dry)
C-011-060	Replace culvert	Small unnamed trib. to Noti Creek/Reservoir	No	Yes	Yes (if not dry)
C-015-070	Replace ford with culvert	Unnamed trib. to Wildcat Creek	Yes (OC Coho)	Yes	Yes
C-017-070	Replace ford with culvert	Small unnamed trib. to Fish Creek	No	Yes	Yes (if not dry)
C-020-050	Replace culvert	Unnamed trib. to Wildcat Creek	No	Yes	Yes
B-25-020	Replace ford with bridge	Rock Creek	Yes (OC Coho)	Yes	Yes
C-028-010	Replace culvert	Small unnamed trib. to Turner Creek	Yes (OC Coho)	Yes	Yes (if not dry)
C-028-031	Replace culvert	Small unnamed trib. to Turner Creek	Yes (OC Coho)	Yes	Yes (if not dry)
F-030-030	Temp. construction bridge	Unnamed trib. to Knowles Creek	Yes (OC Coho)	Yes	Yes
F-030-060	Temp. construction bridge	Knowles Creek	Yes (OC Coho)	Yes	Yes
C-032-010	Replace culvert	Small unnamed trib. to Knowles Creek	No	Yes	Yes (if not dry)
F-032-050	Temp. construction bridge	Unnamed trib. to Knowles Creek	Yes (OC Coho)	Yes	Yes
C-034-030	Replace culvert	Park Creek	No	Yes	Yes
C-035-030	Replace culvert	Unnamed trib. to Siuslaw River	Yes (OC Coho)	Yes	Yes
C-038-050	Replace culvert	Small unnamed trib. to Siuslaw River	No	Yes	Yes (if not dry)

Structure ID[2]	Work Proposed	Stream	Potential ESA Fish Present	In-water Work	Fish Salvage Likely Required
C-038-090	Replace culvert	Small unnamed trib. to Siuslaw River	No	Yes	Yes
B-039-030	Replace bridge	Hanson Creek	Yes (OC Coho)	Yes	Yes
BS-039-030	Stabilize bank	Hanson Creek	Yes (OC Coho)	Yes	Yes
C-041-050	Replace culvert	Small unnamed trib. to Siuslaw River	No	Yes	Yes

Source: Site visits, StreamNet, and discussions and onsite meetings with ODFW and NMFS biologists as well as BPA Project Engineers/Foresters.
1. Improvements on streams with potential for Oregon Coast coho were designed to satisfy NMFS fish passage standards. Streams with potential for historic fish presence are included, and improvements at these locations were designed to satisfy ODFW fish passage standards.
2. Structure IDs starting in "C" are culverts to be replaced; structure IDs starting with "B" are bridges to be installed/replaced; structure IDs starting with "BS" are bank stabilizations; structure IDs starting with "F" are existing fords to spanned by temporary construction bridges.

Beneficial effects of the Proposed Action would include improved fish passage and fish access to additional upstream aquatic habitats, improved channel condition and more natural hydraulic conditions at stream-road crossings, reduced sediment inputs to streams based on improvements to existing access road conditions, and increased access controls (*e.g.*, gates) to minimize unauthorized and off-road vehicle use of BPA access roads. Detailed BMPs proposed as part of the project are summarized in the following section.

With the implementation of erosion control and spill control measures, designing new and replacement culverts and bridges using fish passage design criteria from NMFS (NMFS 2008) and ODFW (ODFW 2006), conducting work within the wetted-channel during approved ODFW in-water work windows, isolating in-water work areas, and conducting fish salvage if necessary, impacts on fish and fish habitat from the Proposed Action would be low to moderate.

3.4.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to streams and fish from the Proposed Action:

- Conduct in-water work in all streams in the Upper Willamette River subbasin between July 1 and October 15 (Long Tom River tributaries) or during ODFW approved extensions.
- Conduct in-water work in all streams in the Siuslaw River subbasin between July 1 and September 15 or during ODFW approved extensions.
- Divert stream flow around the work area and maintain downstream flow during construction.
- Isolate in-water work areas prior to culvert and bridge installations. Dewater work area as necessary for construction and to minimize turbidity. Do not discharge turbid water to streams.
- Comply with applicable Clean Water Act permits for all work in wetlands or streams.

- Use existing road systems, where possible, to access structure locations.
- Restrict construction vehicles and equipment to access roads and existing work areas only. Return temporary disturbance areas for culvert, bridge, and road work to pre-existing contours and seed.
- Dispose of waste material generated from access road work in a stable upland site approved by a geotechnical engineer or other qualified personnel. Smooth material to match adjacent grades, and seed for stability.
- Conduct soil-disturbing activities during dry conditions to the greatest extent practicable.
- Outslope access roads (e.g., 2 to 5 percent), maintaining natural drainage patterns and minimizing interceptions and concentration of upgradient runoff when practicable.
- Store, fuel, and maintain all vehicles and other heavy equipment (when not in use) in a designated upland staging area located a minimum of 150 feet away from any stream, waterbody, or wetland or where any spilled material cannot enter natural or manmade drainage conveyances.
- Confirm heavy equipment is clean (e.g., power-washed) and that it does not have fluid leaks prior to contractor mobilization to site. Inspect equipment and tanks for drips or leaks daily and make necessary repairs within 24 hours.
- In the event of a spill, immediately contain the spill, eliminate the source, and deploy appropriate measures to clean and dispose of spilled materials in accordance with federal, state, and local regulations.
- Maintain emergency spill control materials, such as oil booms and spill response kits, on-site at each ford or culvert replacement site at all times and ready for immediate deployment.
- Develop, implement, and follow a spill prevention and spill response plan prior to rebuild construction.
- Conduct fish salvage according to NMFS/ODFW requirements (NMFS 2000; ODFW 2015). Minimize size of dewatered work area as practicable, and dewater isolated work areas slowly to allow for fish salvage.
- Install culverts and bridges in accordance with NMFS/ODFW fish passage requirements.
- Install temporary construction bridges where repeated use of existing fords is necessary.
- Restore all temporarily disturbed soils according to requirements in the USACE/Oregon Department of State Lands (DSL) Removal/Fill Permit for the project (pending), and the USFWS and NOAA Fisheries biological opinions for the project (USFWS 2015; NOAA 2016 [pending]), to minimize adverse impacts to streams and fish.

Access roads/drainage BMPs and specifications:

- Utilize minimum of 18-inch diameter pipes for cross-drain replacements and installation of additional cross-drains; install in accordance with BPA construction standards.
- Design headwaters culverts (non-fish drainages) for the 100-year storm event and include a blockage allowance when sizing culverts to minimize future maintenance needs.
- Size non-fish culverts to provide a free flow condition for the 100-year storm event.
- Develop a spill prevention and spill response plan prior to rebuild construction.
- Minimize dust by implementing vehicle speed limits on unimproved roads, application of water, or other approved methods.

3.4.4 Environmental consequences—No Action Alternative

Streams

There would be no construction impacts to streams from the No Action Alternative at this time. The number of maintenance activities, and thus the level of impact, could increase as structures deteriorate. Areas where structures are located adjacent to streams, especially those without existing access and requiring off-road vehicle travel, have a greater risk of causing sedimentation from maintenance around these structures. Temporary soil erosion and sedimentation of waterbodies could occur as soils are exposed during repair activities.

Fish

There would be no construction-related impacts from the No Action Alternative at this time. Undersized and impassable culverts would not be replaced and existing fords would not be replaced with fish passable culverts or bridges. Therefore, fish passage would continue to be blocked and proposed channel improvements at stream-road crossings would not occur. In addition, access roads would not be improved. Reduced sediment delivery to streams based on road improvements would not occur. Impacts to fish resulting from the No Action Alternative would be similar to the impacts described for ongoing operation and maintenance of the Proposed Action. However, access road repairs and culvert, bridge, and ford replacements or repairs could result in greater fish mortality and larger habitat impacts if necessary for emergency access during higher flow conditions or periods when ESA-listed fish species are present, including during or after spawning. Impacts to fish from the No Action Alternative would likely be low to moderate.

3.5 Wetland, Floodplains, and Groundwater

3.5.1 Affected Environment

Wetlands and Waters

Wetlands are defined as those areas where surface water or groundwater saturates the soils for sufficient duration during the growing season, and at a frequency to support vegetation adapted

to saturated soil conditions [Clean Water Act, 40 Code of Federal Regulations (CFR) 230.3(t)]. Wetlands perform a number of functions that are considered valuable, including water storage, water filtration, and biologic productivity. Wetlands can support complex food chains that provide valuable sources of nutrients to plants and animals. Wetlands also provide general and specialized habitat for a wide variety of aquatic and terrestrial species. ***Jurisdictional waters*** ("waters" in this section) include rivers, lakes, streams, ponds, ***ephemeral*** or intermittent drainages, and some roadside or agricultural ditches that have a connection to downstream jurisdictional waters. For the purposes of this project, all delineated ditches and streams were assumed to be jurisdictional if they had bed and bank and some evidence of flow. Jurisdictional rivers and streams are discussed in more detail in Section 3.4.

Wetland scientists conducted field investigations and identified 285 ***jurisdictional wetlands*** and waters, which included 130 wetlands (totaling approximately 7.32 acres), 122 streams, 33 ditches, and 2 ponds that could be affected by structure replacement and access road construction (MB&G 2015a). All wetlands and waters were assumed to be subject to Federal and State of Oregon jurisdiction. Delineation of waters/wetlands was conducted in accordance with current USACE protocols (USACE 2010). Assessments of wetland function were conducted in the field using best professional judgment and on representative wetlands from each of seven watersheds using the Oregon Rapid Wetland Assessment Protocol (OWRAP) (Adamus et al. 2010).

Wetlands and waters in the project area are associated with topographic depressions, flat valley bottoms, riparian areas, hill slopes, ravines, and drainage swales. Dominant hydrologic sources to these wetlands and waters include direct precipitation and surface and shallow subsurface flow. The wetlands in the Willamette River Valley often have a seasonally perched water table due to heavy clay soils, which can cause ponding in the winter months. This seasonal ponding may be more prevalent due to soil compaction from heavy grazing or farm vehicle traffic. The wetlands in the Coast Range are mainly adjacent to rivers and streams, often forming narrow fringe wetlands.

Wetlands identified within the project area during the field investigation fall into the category of ***palustrine*** wetlands. Palustrine wetlands are non-tidal wetlands that are not associated with lake shores or rivers. They may be dominated by herbaceous vegetation (palustrine emergent), shrubs and low trees (palustrine, scrub-shrub), forest (palustrine forested), or open water (palustrine open water). The vast majority of the wetlands within the project area have been disturbed through grazing, agriculture, and development. Because of this disturbance and because the project area is maintained free of trees, the majority of the wetlands identified in the project area were classified as PEM (67 total), with some PSS (55 total) and PFO (6 total).

Vegetation communities found in palustrine emergent wetlands located in the Willamette Valley are typically dominated by bluegrass species (*Poa* spp.), curly dock (*Rumex crispus*), common velvet grass (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), large camas (*Camassia leichtlinii*), field meadow-foxtail (*Alopecurus pratensis*), rush species (*Juncus* spp.), sedge species (*Carex* spp.), reed canary grass (*Phalaris arundinacea*), pennyroyal (*Mentha pulegium*), small camas (*Camassia quamash*), spike-rush species (*Eleocharis* spp.), tall false rye grass, tufted hair grass (*Deschampsia caespitosa*), and western buttercup (*Ranunculus occidentalis*). The

vegetation communities associated with wetlands in the Willamette Valley are generally maintained through a combination of transmission line maintenance to remove trees and tall shrubs, grazing from livestock, and/or cultivation for agricultural crops.

Palustrine emergent wetlands within the Coast Range are typically located on low gradient hillslopes, in roadside ditches, and in riparian corridors abutting waterways within valleys. The vegetation communities within these wetlands are typically dominated by creeping buttercup, giant horsetail (*Equisetum telmateia*), field horsetail *(Equisetum arvense*), hairy hedge-nettle (*Stachys pilosa*), Pacific water-dropwort (*Oenanthe sarmentosa*), piggyback-plant (*Tolmiea menziesii*), red-tinge bulrush (*Scirpus microcarpus*), rush species, sedge species, spreading bentgrass (*Agrostis stolonifera*), western lady fern (*Athyrium cyclosorum*), and yellow-skunk-cabbage (*Lysichiton americanus*).

The less common palustrine, scrub-shrub wetlands typically occur in riparian corridors abutting perennial and intermittent waterways within both the Willamette Valley and Coast Range. Salmonberry (*Rubus spectabilis*), Pacific willow (*Salix lucida*), and Sitka willow (*Salix sitchensis*) are typically the dominant shrub canopy species within these wetlands. Also common is a mixed abundance of co-dominant herbaceous species including piggyback-plant, reed canarygrass, yellow-skunk-cabbage, and western lady fern. Trees including red alder (*Alnus rubra*) and Oregon ash (*Fraxinus latifolia*) occur sporadically within these wetlands; however, these trees account for less than 30 percent cover within the wetlands.

Six palustrine forested wetlands are documented in the project area. Oregon ash and clustered rose (*Rosa pisocarpa*) form the dominant vegetation species within one palustrine forested wetland. The canopy of the five other palustrine forested wetlands is dominated by mature red alder with sporadic western redcedar (*Thuja plicata*) and Sitka spruce (*Picea sitchensis*). The understory is dominated by yellow-skunk-cabbage, Pacific water-dropwort, salmonberry, and piggyback-plant.

Floodplains

The Federal Emergency Management Agency identifies areas with a one percent chance of being flooded in a given year as 100-year floodplains. The project area crosses the mapped 100-year floodplains of a number of waterbodies, shown in Figure 3-5, including Coyote Creek, Job Swale Creek, Knowles Creek, Middle Fork Coyote Creek, Noti Creek, and the Siuslaw River. Nine of the 289 existing transmission structures (less than 1 percent) lie within or on the boundaries of these floodplains. Existing and proposed new access roads also lie within the floodplains of these waterbodies.

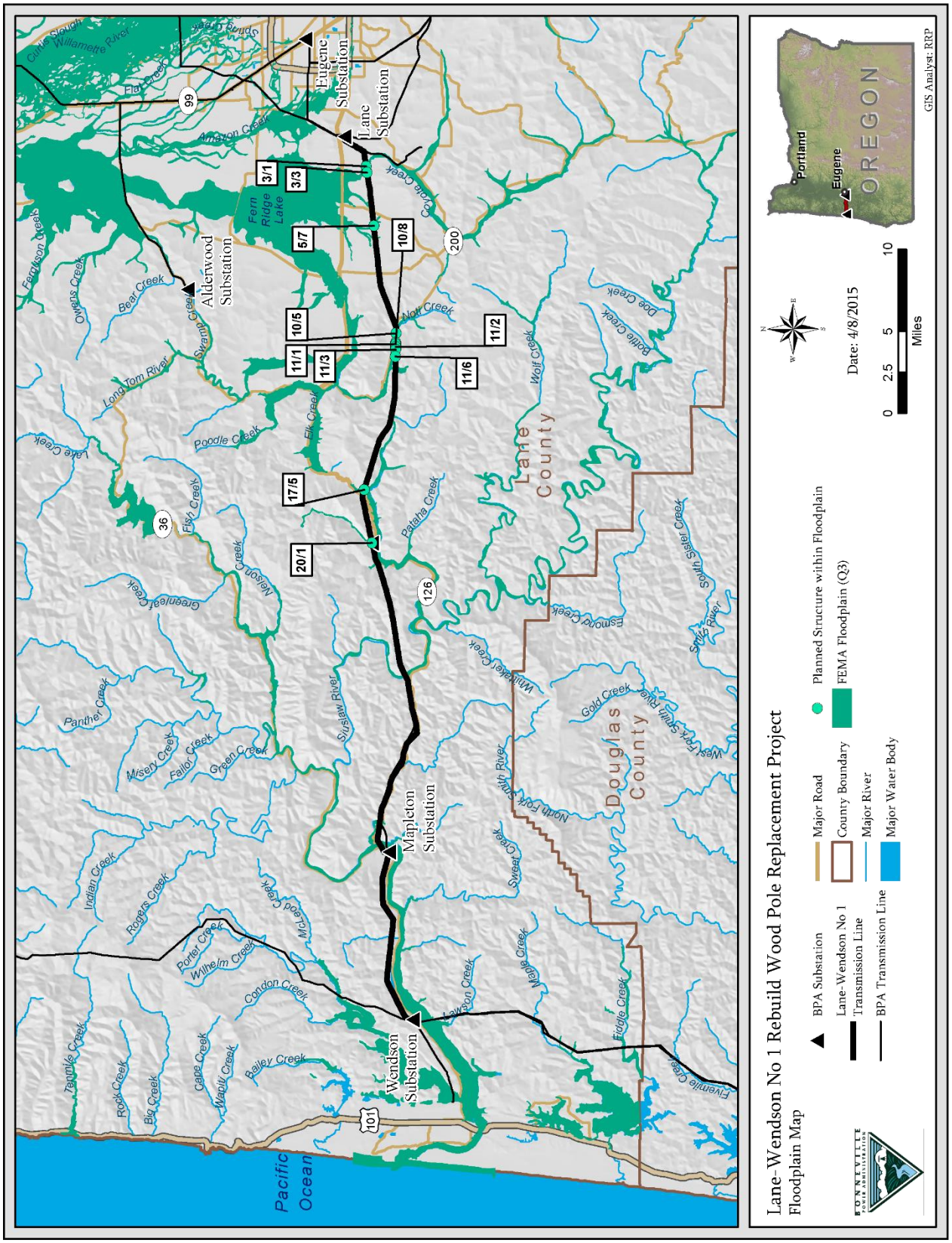

Figure 3-5. Floodplains Intersection by the Project Area Groundwater Resources

Groundwater is heavily used as the domestic water supply in the majority of the project area. Well logs maintained by the Oregon Water Resources Department note that groundwater is first encountered at 79 to 80 feet below ground surface at BPA's Lane Substation, the Walton Fire Department Community Center, and BPA's Wendson Substation (Oregon Water Resources Department 2014). There are no groundwater management areas or sole source aquifers within the project area. The nearest sole source aquifer, the North Florence Dunal Aquifer, is approximately 2.3 miles west of the Wendson Substation (DEQ 2008).

3.5.2 Environmental Consequences—Proposed Action

Wetlands and Waters

In most cases, transmission line structures would be placed in the same holes from which they were removed. To prepare for installation, each existing hole would be cleaned out and re-augered so that it is approximately five feet in diameter and 10 to 12 feet deep. In some or all wetland areas, a 4-foot diameter corrugated metal pipe (i.e., culvert) would be installed upright in the hole extending to the soil surface. The new structure would be placed within the vertical pipe and would be backfilled with crushed rock. The use of culverts surrounding the poles would improve the stability of the pole in soft wetland soils, increase the longevity of the structure, and help prevent leaching of PCP into surrounding areas from wood-pole structures. In addition, multi-layer barrier wraps would be installed on the buried portion of all poles located in wetland areas to help prevent the leaching of PCP. If structures need to be relocated, wetlands would be avoided if possible.

Replacement of transmission line structures would impact 74 wetlands and 67 ditches and streams throughout the project. The Proposed Action would result in both temporary and permanent wetland impacts (MB&G 2015b). The majority of the wetland and waters impacts associated with the Proposed Action would occur as a result of the improvement and reconstruction of existing access roads and the construction of new permanent access roads. BPA has attempted to reduce impacts to wetlands and waters associated with access roads through alignment revisions, reductions in the standard width from 14 feet to 12 feet in some locations, and removal of some of the access roads.

Improvement of existing access roads would result in the greatest impacts to jurisdictional wetlands and waters because of the large number of roads requiring improvement. Many of these roads are dirt tracks and fill would be needed where they cross wetlands to make them serviceable.

The largest single wetland impact (0.38 acre) is associated with construction of a new roadbed within the transmission line right-of-way, replacement of two culverts, and replacement of a transmission line structure across a large Willamette Valley wetland. The impacted wetland is highly degraded, has been subject to hydrologic modifications, and is dominated by invasive plants. Proposed wetland mitigation through the use of mitigation banks is described later in this section.

Temporary impacts associated with pole replacement would consist of construction access by heavy equipment within a 25-foot radius of the structure, construction of temporary roads, and

the installation of guy wire anchors and grounding wires at some structures. Impacts to wetlands would occur as wetland vegetation is crushed and soil is compacted by construction equipment. However, construction activities would be planned to the extent possible during drier weather to minimize impacts to wetland areas. Temporary wetland and waters impacts from structure replacement would be expected to total approximately 0.926 and approximately 0.008 acre, respectively.

Temporary grading impacts within wetlands adjacent to streams are also expected near culvert installations and replacements to allow for channel grading to match the new culvert grades. Since many of the wetlands are seasonally dry, construction equipment would be able to gain access to sections of the transmission line right-of-way by driving over the wetland areas during the dry season thereby minimizing impacts. If wet areas persist during the construction season, crane mats or other low impact methods would be utilized. Any temporary structures placed within the wetlands would be removed following construction.

Temporary impacts from the Proposed Action are expected to total approximately 4.48 acres within wetlands and approximately 0.04 acre within waters. Table 3-11 shows impacts to wetland and waters from the Proposed Action by type of project-related activity.

Table 3-11. Approximate Impacts to Wetlands and Waters from the Proposed Action

	Wetlands				Waters			
	Permanent		Temporary		Permanent		Temporary	
	Square Feet	Acres	Square Feet	Acres	Square Feet	Acres	Square Feet	Acres
Transmission tower replacement	908	0.021	40,347	0.926	0	0	350	0.008
Road construction	20,638	0.474	0	0	13	0.001	0	0
Road improvement	34,436	0.791	0	0	2,079	0.048	0	0
Road reconstruction	21,826	0.501	0	0	1,744	0.040	0	0
Culverts, drain dips, bridges, etc.	31,205	0.716	5,682	0.130	8,215	0.189	1,150	0.026
Temporary access	0	0	153,794	3.531	0	0	259	0.006
Total for Proposed Action[1]	**100,741**	**2.312**	**195,095**	**4.479**	**11,422**	**0.262**	**1,760**	**0.040**

[1] Multiple actions would occur within wetlands and waters in the same footprint, such as a culvert replacement in the same area as road improvements. The total does not include overlap between impacts.
Source: MBG 2015b

Overall, impacts to wetlands and waters from activities associated with the Proposed Action would be low to moderate. However, implementation of other BMPs would help reduce and minimize the potential for impacts to wetlands and waters.

Floodplains

Replacement of the 9 wood-pole structures located within a 100-year floodplain would temporarily disturb 0.32 acre of soils in floodplains during construction, as shown in Table 3-12.

Any impacts associated with structure replacement within floodplains would be short-term and would likely not alter the overall floodplain function. There could be minor impacts to floodplains from soil compaction and vegetation removal, such as:

- Increased erosion within the floodplain until new vegetation is established.
- Interference of subsurface water flow within the floodplain.
- Habitat destruction and hindered capacity of the floodplain to dissipate water energy during floods.

However, the portion of each floodplain potentially cleared or compacted would be small and not affect the overall floodplain function. In addition, implementation of BMPs would minimize the potential for impacts to floodplains.

The construction of new access roads and reconstruction of existing access roads would result in low impacts to floodplains. As listed in Table 3-12, 10 access road segments would be constructed or reconstructed within the 100-year floodplains of Coyote Creek, Job Swale Creek, Knowles Creek, Middle Fork Coyote Creek, Noti Creek, and the Siuslaw River. These construction activities would result in a total disturbance area of 3.3 acres of floodplains. Some direction of travel, including potential temporary access road construction, would occur within floodplains, but these temporary access roads would be removed and returned to their original contours following construction. Roadway improvements associated with construction and reconstruction activities would not alter the course of floodwaters. In addition, like the construction activities for the transmission structures, the access road construction activities would result in soil compaction and removal of vegetation, which could increase erosion, interfere with subsurface water flow in the floodplain, and hinder the capacity of the floodplain to dissipate water energy during floods. However, the portion of each floodplain potentially cleared or compacted would be small and not affect the overall floodplain function. In addition, implementation of BMPs would minimize the potential for impacts to floodplains. In summary, impacts of the Proposed Action to floodplains would be low to moderate.

Table 3-12. Impacts to Floodplains from the Proposed Action

Floodplain	Segment	Construction Activity Proposed	Disturbance Area (square feet) in 100-year Floodplain[1,2]
Coyote Creek	3/1	Two-pole replacement	1,954
Coyote Creek	3/3	Two-pole replacement	1,954
Coyote Creek	3/3	Road reconstruction	6,583
Middle Fork Coyote Creek	4/6	Road reconstruction	7,175
Job Swale Creek	5/6	Two-pole replacement	1,954
Noti Creek	11/2	Two-pole replacement	248
Noti Creek	11/3	Two-pole replacement	1,954
Noti Creek	11/3	Road improvement	26,186
Noti Creek	11/5	Two-pole replacement	9
Noti Creek	11/5	Road reconstruction	1,547
Noti Creek	11/6	Road reconstruction	3,734
Noti Creek	12/1	Three-pole replacement	1,954
Noti Creek	12/1	Road improvement	3,380
Siuslaw River	20/1	Three-pole replacement	1,954
Siuslaw River	20/1	Three-pole replacement	1,954
Siuslaw River	20/3	Road improvement	57,354
Siuslaw River	21/2	Road improvement	12,636
Knowles Creek	33/1	Road improvement	5,482
Siuslaw River	35/4	Road improvement	5,536
Total			**143,544 square feet (3.3 acres)**

[1] Disturbance area assumes a 25-foot radius (1962.5 square feet) per structure.
[2] Disturbance area assumes a road width of 14 feet plus 3-foot shoulders on each side, for a total width of 20 feet.

Groundwater Resources

Groundwater flows could be impacted by soil compaction during construction of structures and access roads, which would reduce infiltration capacity and increase surface runoff to streams in localized areas. However, the roads would not be paved with an impermeable surface so some infiltration would still occur through the roads and the addition of drain culverts, water bars, and drain dips would convey water from the roads into nearby permeable (uncompacted) soil. As discussed in Section 3.2, soil compaction from the Proposed Action would be temporary and occur in a relatively small area.

Impacts on groundwater quality from accidental petroleum spills could occur where groundwater levels are shallow, but spill containment BMPs would be implemented as described

later in this section. Any chemical spills would be of a small volume that could be contained and cleaned up quickly. Any impacts to groundwater quality would be localized, short-term, and likely would not exceed state or federal water quality criteria.

Once constructed, the new structures would have the potential to impact water quality by leaching PCP, a general biocide that is commonly used as a wood preservative treatment for utility poles. However, U.S. Environmental Protection Agency (EPA) studies estimate that the level of PCP in waters due to utility poles is a tiny fraction of the levels that create health concerns.

EPA has assessed the potential for PCP to occur in surface waters and impact drinking water as a result of PCP-treated poles. For adults, the calculated level of concern for acute and chronic dietary risk from PCP in drinking water is 10,465 parts per billion (ppb) of PCP; for children, this level is 2,990 ppb. Using modeling, available environmental fate data, and conservative assumptions, EPA has estimated that environmental concentrations of PCP for surface water due to PCP-treated poles are less than 1 ppb (EPA 2008). In wetlands, the underground portion of the structures would have a multi-layer barrier wrap placed around the pole to contain PCPs and prevent them from leaching into surrounding soil. Therefore, the impacts of the Proposed Action to drinking water and groundwater would be low.

3.5.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to wetlands, floodplains, and groundwater from the Proposed Action:

Wetlands and Waters

- Impacts to wetlands and waters would be minimized, to the extent technically feasible, by narrowing road widths in wetlands and by complying with conditions in the USACE/DSL Joint Removal-Fill Permit for the project.

Floodplains

- Deposit and stabilize all excavated material not reused in an upland area outside of floodplains.
- Install erosion-control measures prior to work in or near floodplains.
- Avoid construction within floodplains to protect floodplain function, where possible.

Groundwater Resources

- Prepare and implement a storm water pollution prevention plan.
- Inspect and maintain tanks and equipment containing oil, fuel, or chemicals for drips or leaks to prevent spills onto the ground or into water bodies.
- Maintain and repair all equipment and vehicles on impervious surfaces away from all sources of surface water.
- Refuel and maintain equipment away from natural or manmade drainage conveyances, including streams, wetlands, ditches, catch basins, ponds, and culverts.

- Provide spill containment and cleanup, and use pumps, funnels, and absorbent pads for all equipment-fueling operations.
- Keep, maintain, and have readily available appropriate spill containment and cleanup materials in construction equipment, in staging areas, and at work sites.
- Place sorbent materials or other impervious materials underneath individual wood poles at pole storage and staging areas to contain leaching of preservative materials.
- Use multi-layer barrier wraps around base of poles located in wetlands to help prevent leaching of the preservative material into surrounding areas.
- Monitor revegetation and site restoration work for adequate growth; implement contingency measures as necessary.
- Monitor erosion control BMPs to ensure proper function and nominal erosion levels.

3.5.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, impacts associated with rebuilding the transmission line would not occur. However, it would be expected that over time structures would be replaced and roads reconstructed or improved as needed. This would create the same impacts as described for the Proposed Action. However, because the work could be needed on an emergency basis during the wet season, it could require multiple trips through one or more waters or wetlands, or necessitate emergency construction of temporary access roads. Impacts to wetlands, floodplains, or groundwater could be slightly higher than under the Proposed Action but would still be moderate.

3.6 Wildlife

3.6.1 Affected Environment

Wildlife evaluated in this section includes common wildlife, as well as ***threatened species***, ***endangered species***, ***candidate species***, and special-status wildlife species. The emphasis of the wildlife evaluation is to determine potential use of the project area by special-status species, though an account of common wildlife species is included to provide a comprehensive description of existing habitat conditions found in the project area.

Wildlife habitat includes areas used for breeding and rearing young, feeding, migration, and dispersal. Periodic variations in habitat may result in stochastic or predictable seasonal absence of species. Vegetation type, climate, and habitat continuity vary dramatically in the project area and are significant drivers in determining composition of local and migratory wildlife. The project area crosses two regional ecoregions and three local ecoregions, originating in the southern portion of the Willamette Valley near Eugene and traversing the Coast Range, terminating just east of Florence (also described in Section 3.3) (Omernik 1987).

Common Wildlife

The project area and the surrounding areas support over 200 species of wildlife (Appendix B, Tables B-1 and B-2). Common wildlife species that are known to occur within 5 miles of the project area were identified from incidental observations during site visits, the Geographic Biotic Observations Database maintained by the BLM, and the Integrated Biodiversity Information System Database maintained by the Northwest Habitat Institute.

Willamette Valley

The easternmost 13 miles of the project area are located within the Willamette Valley, of which a greater percentage passes through agricultural lands and urban residential areas in the Prairie Terraces ecoregion than the forest-dominated Valley Foothills. Historically, the low-relief topography formed on ***fluvial*** terraces of the Willamette River and tributaries supported extensive prairies of ***herbaceous*** vegetation. In the Prairie Terraces, habitat for wildlife can be found in agricultural lands, mixed stands of conifer and hardwood trees, and along linear corridors such as riparian areas and fence lines. Habitats are varied in the Valley Foothills zone, ranging from upland grasslands to woodlands and forests of western hemlock (*Tsuga hetrophylla*) and Douglas-fir (*Pseudotsuga menziesii*).

Conversion of land in the Willamette Valley and foothills to agriculture and urban development has taken place for over 150 years and has eliminated or fragmented habitat and dispersal corridors for many species (USFWS 2010c). However, many wildlife species still thrive in the modified and heavily-managed lands of the Willamette Valley region (Appendix B, Table B-1).

Open habitat found in grassland pastures, fallow fields, clearcut areas, young Christmas tree farms, and grass-seed operations attracts hawks, crows, sparrows, coyotes, deer, rodents, and other common wildlife species. Fence rows and shrubby thickets commonly host spotted towhee (*Pipilo maculatus*), ruby-crowned kinglet (*Regulus calendula*), house wren (*Troglodytes aedon)*, mourning dove (*Zenaida macroura)*, western scrub jay (*Aphelocoma californica)*, striped skunk (*Mephitis mephitis)*, and brush rabbit (*Sylvilagus bachmani)*. Wetlands and riparian areas feature willow fly-catcher (*Empidonax traillii*), common yellowthroat (*Geothlypis trichas)*, red-winged blackbird (*Agelaius phoeniceus)*, belted kingfisher (*Ceryle alcyon)*, great blue heron (*Ardea herodias)*, northern harrier (*Circus cyaneus)*, mallard (*Anas platyrhynchos)*, Townsend's vole (*Scapanus townsendii)*, nutria (*Myocastor coypus)*, and beaver (*Castor canadensis)*. Remnant oak woodlands are fairly common in the foothills and harbor white-breasted nuthatch (*Sitta carolinensis)* and western grey squirrel (*Sciurus griseus)*. Urban and more densely-populated residential areas attract wildlife as well, including Brewer's blackbird (*Euphagus cyanocephalus)*, American robin (*Turdus migratorius)*, and northern raccoon (*Procyon lotor)*.

Coast Range

Roughly two-thirds of the project area is located in the Mid-Coastal Sedimentary ecoregion. Most land in the Coast Range is devoted to timber production and prevailing management practices greatly influence habitat types available to wildlife. Most timber lands are managed for Douglas-fir, a shade-intolerant species which grows best in clearings. Reserves of late-***seral*** forest found within the project area are on some of the federal BLM or USFS lands where timber

management occurs for the protection of wildlife and ecological processes unique to old-growth habitat.

Within and adjacent to the project area, topography of the Coast Range is moderately steep and dissected with many small drainage courses. Riparian areas along the numerous small waterways are often rich in songbird habitat hosting Wilson's warbler (*Cardellina pusilla*), Swainson's thrush (*Catharus ustulatus*), Pacific wren (*Troglodytes pacificus*), and black-headed grosbeak (*Pheucticus melanocephalus*). Small wetlands formed from overbank flooding and impounded waterways offer habitat for amphibians including rough-skinned newt (*Taricha granulosa*), red-legged frog (*Rana aurora*), and Pacific chorus frog (*Pseudacris regilla*). The Siuslaw River and adjacent wetlands provide habitat for belted kingfisher (*Megaceryle alcyon*), red-winged blackbird (*Agelaius phoeniceus*), green heron (*Butorides virescens*), great blue heron (*Ardea herodias*), common merganser (*Mergus merganser*), bald eagle (*Haliaeetus leucocephalus*), river otter (*Lontra canadensis*), mink (*Neovison vison*), muskrat (*Ondatra zibethicus*), and northern raccoon (*Procyon lotor*). Natural clearings and recently logged areas serves as habitat for rufous hummingbird (*Selaphorus rufus*), song sparrow (*Melospiza melodia*), band-tailed pigeon (*Patagioenas fasciata*), ruffed grouse (*Bonasa umbellus*), elk, black-tailed deer (*Odocoileus hemionus columbianus*), mountain beaver, western pocket gopher (*Thomomys* spp.), black bear (*Ursus americanus*), western fence lizard (*Scheloporus occidentalis*), and common garter snake (*Thamnophis sirtalis*). Conifer-dominated forests are commonly inhabited by varied thrush (*Ixoreus naevius*), red crossbill (*Loxia curvirostra*), chestnut-backed chickadee (*Poecile rufescens*), Steller's jay (*Cyanocitta stelleri*), dusky grouse (*Dendragapus obscurus*), barred owl (*Strix varia*), Cooper's hawk (*Accipiter cooperii*), pileated woodpecker (*Dryocopus pileatus*), northern flicker (*Colaptes auratus*), Townsend's chipmunk (*Neotamias townsendii*), and Douglas' squirrel (*Tamiasciurus douglasii*). Moist microclimates, such as ephemeral stream courses and decaying trees, within coniferous forests offer habitat to amphibians, including ensatina (*Ensatina eschscholtzii*), western red-backed salamander (*Plethodon vehiculum*), and northwest salamander (*Ambystoma gracile*).

Threatened, Endangered, Candidate, and Special-status Species

The Oregon Biodiversity Information Center (ORBIC) and consultation with USFWS were the primary sources used for the current classification of special-status species that may occur near the project area. *Rare, Threatened and Endangered Species of Oregon* catalogs the distribution and relative scarcity of imperiled plants and wildlife (ORBIC 2013). BPA biologists conducted field assessments in 2013 and 2014 to document the presence of suitable habitat for wildlife species, concentrating on ESA-listed species. While in the field, any incidental wildlife observations during daylight hours were recorded.

Threatened, endangered, candidate, and special-status species with the potential to occur within the project area are summarized in Appendix B, Table B-2. A total of 52 wildlife species listed as threatened, endangered, candidate, and special-status may occur in the project area; however, out of the 52, only 13 migratory and 12 resident bird, 7 amphibian and reptile, 10 mammal, and 2 invertebrate species are likely to use the project area. Federally-listed species that area likely to use the project area are discussed in more detail below.

The preliminary site evaluation identified four federal-listed species as unique environmental resources that may be affected by the Proposed Action. To inform the decision-making process and the design of the Proposed Action, BPA conducted additional studies for the four federally-listed species, which are discussed in more detail below.

Streaked Horned Lark

Streaked horned lark (*Eremophilia alpestris* spp *strigata*) is a federally-threatened species under the ESA. There are documented occurrences of the streaked horned lark in one portion of the project area, and suitable habitat is present within the project area in the Prairie Terraces ecoregion (City of Eugene 2014). The availability of suitable habitat and documented use of the habitat in 2014 within the project area suggests the Coyote Prairie section of the project area in Line Mile 2 may support 2 to 4 breeding pairs of streaked horned lark (City of Eugene 2014); therefore, the species is likely to use the project area for breeding.

Northern Spotted Owl

The northern spotted owl (*Strix occidentalis caurina*) is a federally-threatened bird under the ESA. There are 15 documented observations of northern spotted owls within one home range radius (1.5 miles) of the project area. Northern spotted owls likely use the forested stands adjacent to the project area as habitat for nesting, roosting, and foraging. Furthermore, designated critical habitat for the spotted owl intersects the project area in 13 separate areas between line miles 13 and 32.

Marbled Murrelet

The marbled murrelet (Brachyramphus marmoratus) is a federally-threatened bird under the ESA. Marbled murrelets forage at sea and fly inland to nesting areas, often using waterways as flight corridors (Evans Mack et al. 2003). Suitable nesting structure occurs in the mature coniferous forest stands of the Coast Range within the project area; therefore, marbled murrelets likely use the coniferous forests for nesting habitat during breeding season in the summer months.

Thirty-three (33) suitable marbled murrelet habitat units are located within the disturbance distance of the Proposed Action (within 0.25 mile). A suitable habitat unit is a forest stand comprised of a central patch of suitable habitat plus a buffering area. The 33 suitable habitat units have not been recently surveyed to determine occupancy, so they are assumed to be occupied. BPA biologists observed potential nest trees (greater than 19-inch diameter and coniferous) within the habitat units that were marked for removal for road construction and identified one tree with suitable nesting platforms, a 22-inch diameter western hemlock (Tsuga hetrophylla) on private land; the tree contains marginal suitable nesting structure and has no known use as a nest tree. Two large Douglas-fir trees on public land (ODFW and BLM), 47-inch diameter and 57-inch diameter, were also identified as suitable marbled murrelet habitat but BPA modified the road design to avoid needing to remove these trees.

Designated critical habitat for the marbled murrelet intersects the project area in three separate areas between Line Miles 21 and 28.

Fender's Blue Butterfly

Habitat requirements for Fender's blue butterfly (*Icaricia icarioides fenderi)*, a federally-endangered species, include lupine host plants (Kincaid's lupine and occasionally sickle-keeled lupine (*Lupinus albicaulis*) for larval food and egg-laying sites and native wildflowers for adult nectar food sources. Population size of Fender's blue butterfly has been found to correlate directly with the abundance of native nectar sources (Schultz et al. 2003). At least 12 acres of high quality habitat are necessary to support a population of Fender's blue butterflies; most prairies in the region are degraded and of low quality, and thus a much larger area is likely required to support a viable butterfly population.

Kincaid's lupine is documented adjacent to the project area near the Lane Substation and Line Miles 1 and 2; therefore, Fender's blue is likely to use the project area to forage, but not to breed.

3.6.2 Environmental Consequences—Proposed Action

Wildlife evaluated in this section includes common wildlife, as well as threatened, endangered, candidate, and special-status wildlife species.

Common Wildlife

The Proposed Action would cause short-term disturbances to common wildlife from construction noise and dust, temporary displacement of wildlife near work areas, human intrusion, physical habitat changes, or harm to individual animals. Permanent impacts could include the modification, loss, and degradation of habitat, and the potential to cause avian collisions with the transmission line.

Short-term disturbance could temporarily impact wildlife species, including black-tailed deer, bald eagles, ***passerine*** bird species, waterfowl, raptors, small rodents, amphibians, and reptiles. Increased noise would result from the use of heavy equipment to remove and install structures and re-string the conductor, as well as to transport equipment to and between sites. Noise from construction activities within the project area would represent a temporary increase over ambient noise conditions. Impacts from noise would vary depending on the proximity of construction areas to wildlife and the duration of the noise disturbance. Based on similar pole replacement projects, this disturbance would generally last only one to two days per structure replacement. Moreover, wildlife would likely avoid construction areas during construction activities.

Nesting raptors are easily disturbed by construction noise, tree removal, and human presence, and they may abandon their nests if the disturbance is severe. Short-term impacts from loss of foraging and ground-nesting habitat around existing structures, due to ground disturbance, would be moderate and may result in minor injury or death of common wildlife, such as common rodents, ***mustelids***, birds, or amphibians. Species would likely use surrounding non-affected areas, outside the construction area for the Proposed Action, for foraging and ground-nesting activities. A temporary increase in noise during construction could result in moderate impacts on wildlife if noise levels reduce the foraging effectiveness of adults or cause adults to abandon nest or den sites, thus leading to mortality of their young. Blasting or rip-rap trenching activities, if needed, would be done outside of the breeding season.

Permanent impacts could result if these displaced individuals move indefinitely to areas of similar habitat nearby, resulting in increased competition for limited resources in the new habitat. However, because noise and activity would be temporary, wildlife would be expected to return after construction is complete, so impacts would be low to moderate.

Vegetation clearing for improvements to access roads would temporarily modify wildlife habitat for resident and migratory wildlife. The area that would be lost would be a relatively small proportion of existing wildlife habitat. Up to a total of 1,218 trees would be removed along the access road system due to centerline adjustments, road widening, and trees at risk of damaging vehicles and equipment. A few trees (about 50), ranging in diameter from 3 to 27 inches, would be removed from riparian areas, reducing the availability of habitat that provides perching, nesting, and foraging opportunities for a variety of bird species. Wildlife, especially nesting birds, could be temporarily displaced by the tree removal. Most of the project area where tree removal is proposed is surrounded by young and older forest habitat. It is unlikely that nesting habitat is limited by the availability of suitable trees for use as roosts, perches, nests, or foraging locations. Because of the dispersed and small scale of tree removal, the impacts of tree removal on wildlife would be low.

Most of the one mile of new road construction involves adding base rock for gravel roads through open areas, such as near the base of transmission line towers and along fence lines. Where possible, access roads would be located in areas that have been previously disturbed, intentionally avoiding impacts to the forest and riparian communities adjacent to the project area. Some access roads would require travel but no ground-disturbing work, thus noise and activity levels during project activities may not increase or just increase slightly above existing conditions. The upgraded condition of roads may slightly increase the use of wildlife habitat by the public.

Replacement of the transmission line structures could slightly increase the risk of avian-line collisions. Although the transmission lines would be in the same general location and horizontal orientation as the existing lines, in some locations the lines would be 5 to 10 feet taller at a height which would be unfamiliar to resident and migratory birds. Birds could collide with the conductors and structures installed under the Proposed Action. Spacing of conductors and insulator assemblies on the transmission line is far enough apart that electrocution of raptors and large birds is rare. The potential for avian collisions would be minimized by the installation of bird diverters on conductors in areas that represent a significant hazard to birds (e.g., river or wetland crossings) and where placement is technically feasible. Bird diverters make conductors more visible to birds so they have time to avoid them. Other wildlife species would likely not be impacted since the presence of the transmission line does not present barriers to migration, create excessive noise, or otherwise cause major behavior changes. The Proposed Action would reduce the potential for avian collisions compared to the existing line by adding bird diverters to the transmission line.

Degradation of wildlife habitat could occur if invasive plants that are not currently present establish themselves in areas that have been disturbed by construction activities. Non-native plants provide poor forage for grazing animals, and impenetrable thickets of gorse and other

weed species can impede wildlife movement. Much of the project area is already occupied by non-native species.

Some replanting with native vegetation would occur as part of the Proposed Action through reseeding and post-project weed treatments. Because weed control activities would be conducted as described later in this section, degradation of habitat below existing conditions is not expected. Therefore, impacts on wildlife species from degradation of habitat would be low with implementation of appropriate weed control measures.

Threatened, Endangered, Candidate, and Special-status Species

Potential impacts from project activities to threatened, endangered, candidate, and special-status species would be low for all species except for marbled murrelet (Appendix B, Table 2). As required by Section 7 of the ESA, BPA prepared a biological assessment for potential effects of the Proposed Action on northern spotted owl, marbled murrelet, streaked horned lark, and Fender's blue butterfly to initiate consultation with USFWS (Turnstone 2014).

Streaked Horned Lark

Elevated noise, increased foot traffic, and visual disturbance from construction equipment and workers have the potential to directly affect the behavior of any streaked horned larks present during construction. These project-related activities, such as the use of heavy equipment and increased vehicular traffic, may cause the larks to become startled, or abandon or destroy their nests.

Disruption, defined as an action resulting in the likelihood of harassment, could result from actions occurring within 100 feet of nest sites if they were conducted during the peak breeding period (April 15 to August 15) (Pearson and Altman 2005). Due to this concern, BPA designed the project work schedule to avoid construction work within the disruption distance of nesting sites during the peak breeding period, as described later in this section. Outside of the peak breeding period, impacts would be reduced through minimized vehicle speeds at the potential breeding sites.

In the short-term, ground-disturbing activities such as vegetation removal and gravel road improvements may alter or degrade existing lark habitat. In the long-term, however, these activities may create and enhance lark habitat, which includes the margins of gravel roads and areas with sparse vegetation. Impacts to streaked horned larks would be low due to implementation of seasonal timing restrictions, minimized vehicle speeds, and the potential for habitat creation.

Northern Spotted Owl

Northern spotted owls may be directly impacted by construction noise or indirectly impacted by the degradation of suitable habitat. USFWS suggests that continuous loud activities within 0.25 mile of a northern spotted owl nest patch would disturb natural behavior, and that construction activities and associated noise within 35 yards of a nest is generally considered disruptive to nesting during the critical breeding period (March 1 to July 7). Moreover, factors such as ambient and background noise levels, topography, and proximity can influence the magnitude of the effect.

No known occupied northern spotted owl nesting sites are located within 0.25 mile of the transmission line right-of-way or access roads and effects from increased noise during construction activities would be temporary. Therefore, impacts from noise disturbance would likely be low. BPA would apply seasonal timing restrictions on construction and enact no-fly zones for helicopter use during the critical breeding season to areas within 0.25 mile of any active nest sites.

About 500 of the 1,218 trees to be removed as part of the Proposed Action occur within suitable northern spotted owl habitat. Because tree removal would be dispersed throughout the 41.3-mile transmission line project area and would laterally occur along established high-contrast edges in the utility corridor or along existing road alignments, tree removal would not reduce the canopy cover and there would be minimal loss of interior forest. Canopy cover would remain above the 60 percent threshold outlined in federal guidelines for a northern spotted owl home range (USFWS 2011). Therefore, the function of nesting, roosting, foraging, or dispersal habitats would be maintained. With implementation of mitigation measures as agreed upon with USFWS in the biological assessment, the project's impacts on northern spotted owl would be low (Turnstone 2014).

Marbled Murrelet

The disruption distance from marbled murrelet nests is 100 yards; the disturbance distance is 0.25 mile (USFWS 2003). Noise above ambient sound levels can disrupt bird behavior to a degree that creates the likelihood of injury, such as causing adult marbled murrelets to startle and abandon their nests (USFWS 2003).

No construction activities are proposed within the disruption distance of suitable marbled murrelet habitat during the critical breeding period (April 1 to August 5). Limited work would occur within the disturbance distance near 29 of 33 suitable nesting sites. Daily timing restrictions would be in effect for any activities occurring within 0.25 mile of occupied suitable habitat during the entire breeding season. Therefore, impacts to marbled murrelets from noise disturbance would be moderate.

The USFWS concurred on July 23, 2015, with BPA's determination that the project may affect, not likely to adversely affect marbled murrelet. Suitable marbled murrelet habitat would be altered by the removal of 136 trees located in 9 of the 33 suitable habitat units, 1 unit of which is on BLM lands. One of the trees marked for removal located on private lands contains suitable nesting structure but has no documented use as a nest site.

On BLM lands the following actions would be implemented:

- In the Late ***Successional*** Reserve areas 118 trees would be removed. Only nine of these trees are over 25 inches dbh (the largest being approximately 37 inches dbh). Most of these trees would be removed along two small sections of access road that run parallel to the right-of-way about 75 feet away.
- In the Matrix (General Forest Management Areas) areas 251 trees would be removed. Only 14 of these trees are over 25 inches dbh, with the largest being approximately 37 inches dbh. These trees would be removed along several miles of access roads.

On non-BLM land, most trees proposed for removal are 16 inches in diameter or less; however, some trees up to 39 inches in diameter would be removed through project actions.

Generally, though, trees to be removed on both BLM land and non-BLM land are located along existing roads and their removal would not create new openings in canopy cover or new high-contrast edges. Impacts to murrelets from the Proposed Action would be moderate because the lateral thinning along roadways and utility corridors would remove some trees from existing marbled murrelet habitat that nesting murrelets need for successful breeding.

Fender's Blue Butterfly

Fender's blue butterfly can be affected by the disturbance or removal of larval host plants, direct harm to larvae or eggs on host plants, harm to adults feeding or breeding, and changes to habitat through invasion of noxious weeds. Because there are no larval host plants documented within the project area, the project would not affect butterfly larvae or eggs.

Suitable nectaring habitat for the Fender's blue butterfly is located within the project area near the Lane Substation in Line Miles 1 and 2. Although no larval host species were found within the project area, host plants are located within 1.25 miles of the project area. Undocumented populations of Fender's blue butterfly may use nectar species within the project area.

Fender's blue butterfly spends only a few weeks in the adult stage and during this time would likely move away from construction activities. Any disturbance of native vegetation during construction would increase the possibility of habitat invasion by non-native plants. Non-native plants can out-compete native plants and could decrease the ability of suitable habitat plants to re-establish. The USFWS Recovery Plan for Fender's blue butterfly recommends the preservation, restoration and management of existing populations and habitat for Fender's blue butterfly (Recovery Action 1) through the identification and protection of the remaining populations with the greatest potential for restoration (USFWS 2010b). The mitigation measures described in Section 3.6.3, including replanting with nectar species, would minimize the likelihood of habitat degradation and help reduce potential mortality of Fender's blue butterfly. The project area does not intersect any protected sites or those identified as having the greatest potential for restoration of Fender's blue butterfly. Therefore, the Proposed Action would likely have a low impact on Fender's blue butterfly.

3.6.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to wildlife during construction from the Proposed Action:

- Install bird diverters where the line crosses major waterways (e.g., rivers, wetlands) or other high bird-use areas, and where it would be technically feasible.
- Minimize the construction area to the extent practicable.
- Restore areas cleared for construction to pre-construction.
- Minimize vehicle speeds to 20 miles per hour or less within 100 feet of streaked horned lark nest sites.

- Follow the measures, terms, and conditions outlined in the USFWS Biological Opinion (July 23, 2015), which includes monitoring the response of streaked horned larks to project construction activities and reporting results to the appropriate USFWS office.
- Implement the following construction timing restrictions:
  - Marbled murrelet critical breeding period: Avoid all work within established disruption distance (100 yards) and no more than 3 consecutive days of work within the established disturbance distance (0.25 mile) of occupied sites from April 1 to August 5
  - Marbled murrelet daily dawn/dusk timing restrictions: Avoid all work within established disturbance distance (0.25 mile) of occupied sites within two hours after sunrise or within two hours before sunset during the entire breeding period from April 1 to September 15
  - Northern spotted owl critical breeding period: Avoid all work within established disruption distance (35 yards) and no more than 3 consecutive days of work within established disturbance distance (0.25 mile) of owl sites from March 1 to July 7
  - Streaked horned lark peak breeding period: Avoid all work within suitable habitat that has documented presence from April 15 to July 15

3.6.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, there would be no impacts associated with structure replacement or access road work at this time. The ongoing maintenance activities and repair of the existing structures and access roads would still occur, likely on a more frequent and sometimes emergency basis due to the deteriorating condition of the existing transmission line. Emergency repairs could occur in sensitive areas or during critical breeding seasons, resulting in impacts to wildlife that would be low to moderate.

3.7 Cultural Resources

3.7.1 Affected Environment

The Proposed Action is subject to Section 106 of the National Historic Preservation Act of 1966 (NHPA), which requires federal agencies to take into account the effects their projects may have on historic properties (cultural resources that are eligible for, or on, the National Register of Historic Places [NRHP]).

Cultural resources include things and places that demonstrate evidence of human occupation or activity related to American history, architecture, archaeology, engineering, and culture. Historic properties, a subset of cultural resources, consist of any district, site, building, structure, artifact, ruin, object, work of art, or natural feature important in human history that meets defined eligibility criteria for the NRHP.

The project area extends through lands that were the traditional home of two different Native American peoples. The portion of the project area located in the Willamette Valley is within the traditional territory of the Kalaypuya. As the project area ascends Badger Mountain and into the Coast Range, it crosses into the traditional territory of the Siuslaw, which extends to the Pacific Coast.

At the time of historical contact, the Willamette Valley, from the falls on the Willamette River at Oregon City south to Cottage Grove, was occupied by the Kalapuya, who also inhabited the northern portion of the Umpqua watershed, south and across the Calapooya Divide from the Willamette Valley. The Kalapuya were divided into 13 or more autonomous groups, with each group composed of 1 or more bands. Each band was composed of the residents of one or more winter villages that shared a language dialect.

The portion of the project area located in the interior of the Coast Range to its western end is within the traditional territory of the Siuslawan Indians. The Siuslaw Indians spoke the Siuslaw language, which had two principal dialects, Siuslaw proper and Lower Umpqua. Ethnohistoric and ethnographic information on the Siuslawans is fragmented and they are often described together with their southern neighbors the Coosans.

Cultural and historic resources background research and surveys were conducted within the right-of-way and along access roads where construction work would be conducted for the project. Based on the results of the background research, two pre-contact isolates and one historic-era resource were known or reported to be located within the project area. However no evidence of these three particular cultural resources was observed during the surveys and subsequent subsurface testing. One cultural resource was identified during survey work in the right-of-way—a prehistoric isolate consisting of a single piece of lithic debitage. In addition, three historic-era isolates were identified during the survey of access roads. Each consists of one or more culturally modified trees related to historical logging in the Coast Range.

Historic resources work also included assessing the NRHP-eligibility of the Lane and Wendson substations and a re-assessment of the NRHP-eligibility of the Lane-Wendson No. 1 transmission line. The Lane and Wendson substations and the Lane-Wendson No. 1 transmission line are considered significant for their association with the development, design, and construction of the technologically advanced BPA Transmission Network. The substations and the transmission line appear to meet the registration requirements for listing in the NRHP as significant elements of the BPA Transmission Network.

3.7.2 Environmental Consequences—Proposed Action

Because the Proposed Action would not modify the Lane or the Wendson substation, it would not adversely affect them. Rebuilding the Lane-Wendson No. 1 transmission line would not adversely affect the characteristics that make the transmission line eligible for listing in the NRHP. The replacement structures would be the same as the existing structures with the exception that several of the two-pole structures would become one-pole structures. The transmission line would also retain its current alignment. The main difference between the existing and proposed transmission line is that some of the tower heights would change. Because the material type and pole design of the support structures would remain largely the

same and because the alignment and function would be unchanged, the transmission line's visual uniformity would remain and the integrity of the transmission line would remain intact. BPA has submitted a determination of no effect to the Oregon SHPO for concurrence (see Section 4.5).

The cultural and historic resources identified during the surveys are located in areas that would not be affected by construction activities. Therefore, no impacts to known resources are anticipated. Unknown cultural resources could be disturbed through accidental discovery. The Proposed Action could result in adverse impacts on these resources, depending on the extent of the resource sites and their proximity to structure sites and access roads. The structures and access roads have been sited to avoid areas that are likely to contain cultural and historic resources, so maintenance of the structures or access roads should not affect known resources. Therefore, impacts to cultural resources would be expected to be negligible to low.

If any unknown cultural and historic resources exist in the project area, it is possible that ground disturbance associated with rebuilding the transmission line and completing access road work could damage such resources, depending on the extent of the resource sites and their proximity to structure sites and access roads.

3.7.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to cultural resources from the Proposed Action:

- Use existing access roads where possible to limit the possibility of new disturbance.
- If ground-disturbing activities cause an inadvertent discovery, all activities near the find would be stopped per BPA's Inadvertent Discovery Procedure. Inadvertent discoveries can include human remains, structural remains, Native American artifacts, or Euroamerican artifacts that were previously unknown. The BPA archaeologist, Oregon SHPO, and affected Tribes would be notified immediately.
- Operations would stop immediately within 200 feet of the inadvertent discovery of human remains, suspected human remains, or any items suspected to be related to a human burial (i.e., funerary items, sacred objects, or objects of cultural patrimony) are encountered during project construction. The area would be secured around the discovery and the Lane County Sheriff, the BPA archaeologist, the SHPO, and affected Tribes would be contacted immediately.

3.7.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, there would be no construction activities except for possible emergency repairs. If any unknown cultural and historic resources exist in the project area, it is possible that ground disturbance associated with emergency repairs could damage such resources. Therefore, impacts to cultural resources from the no action alternative would be expected to be negligible to low.

3.8 Visual Quality

3.8.1 Affected Environment

The project area traverses three Oregon regions starting in the southern portion of the Willamette Valley (just west of the City of Eugene), through the Oregon Coast Range, and ending in the eastern portion of the Coast Range (east of the City of Florence). The project area is situated in two general visual environments: rural/pastoral areas and forested areas.

The rural/pastoral visual environment generally includes the portion of the project area from the Lane Substation (structure 1/1) to just west of the Fern Ridge Substation (near structure 8/2); a length of approximately 8 miles or 20 percent of the total project area length. In this visual environment the topography is mostly flat with some interspersed, rolling hills; there are no substantial hills or topographic features and the sky and weather systems are visible above. Adjacent to the project area large, open pastures are mixed with areas of dense clusters of mature trees (deciduous and evergreen). Portions of the project area are visible from occasional residences and commercial farms in the ***foreground*** (within 0.5 mile) and ***middle ground*** (0.5 mile to 5 miles) of a ***view.*** When the project area is visible, it is a linear element that extends some distance from the viewer. Figure 3-6 shows photographs from representative viewpoints of the project area in the rural/pastoral visual environment.

Throughout the rural/pastoral visual environment, the transmission line consists of wood-pole suspension structures within a shared right-of-way with the Lane Wendson No. 2 line, a lattice-steel structure line. Because the lattice-steel structures on the Lane-Wendson No. 2 line are taller and bulkier than the wood-pole structures on the Lane-Wendson No. 1 line (Figure 3-6, Views 1, 2, and 5) they are the more visually prominent feature within BPA's right-of-way. In the open, pastoral areas, the wood-pole structures are visible in the foreground of views near the project area. However, when ***viewers*** are more than 0.5 mile from the project area (when the project area is beyond the foreground of their ***view*** and within the middle ground), the transmission line and the wood-pole structures are barely visible, or not visible at all, because of their narrow and slender profile. As shown in Figure 3-6, Views 3 and 5, in areas of the rural/pastoral visual environment where there are dense clusters of trees adjacent to the project area, and where vegetation has been removed from the right-of-way, the cleared right-of-way is visible in the middle ground, but the wood-pole transmission structures are still barely visible. When the project area and the wood-pole transmission structures are in the ***background*** (more than 5 miles) of a view, they are not visible because they are either screened by vegetation or they blend into the horizon.

In the rural/pastoral visual environment, there is very minimal light and glare associated with the existing wood-pole transmission line. Generally, light and glare within the project area is only associated with lighting at the power substations.

The forested visual environment in the project area generally begins west of the Fern Ridge Substation (near structure 8/3) and continues west to the end of the Lane-Wendson No. 1 transmission line at the Wendson Substation, a length of approximately 33 miles or 80 percent of the total project area length. In the forested visual environment, the transmission line travels

through the Oregon Coast Range where the topography is much more rugged and the vegetation primarily consists of dense stands of mature evergreen trees. In this visual environment, the wood-pole transmission line (Lane-Wendson No. 1) continues to run parallel to the lattice-steel structure transmission line (Lane-Wendson No. 2), either sharing the same BPA right-of-way or in separate rights-of-way that are near each other. Figure 3-7 shows photographs of some of the representative viewpoints of the project area in the forested visual environment.

The forested visual environment is primarily comprised of BLM land, private timber holdings, and the Siuslaw National Forest. In general, the forested visual environment is very sparsely populated; however, it does include the small communities of Walton and Mapleton. In this visual environment, OR 126 is the main ***travel route*** and access to portions of the project area are mostly from unpaved roads.

The rugged topography and dense stands of evergreen trees obscure views of the project area, including in places where it runs alongside OR 126. The transmission line and structures are rarely visible, even when they are within the foreground (0.25 to 0.5 mile) or middle ground (0.5 to 5 mile) of a view, except for brief glimpses when the transmission line crosses over OR 126 (Figure 3-7, View 7). For the short sections where the project area and transmission line structures are visible, they are visually prominent because the man-made features contrast to the surrounding forested landscape and because the vegetation within the right-of-way has been cleared. In general, however, the right-of-way cleared of vegetation is the most noticeable aspect of the transmission line facility. In the instances where the wood-pole transmission line (Lane-Wendson No. 1) shares right-of-way with the lattice-steel structure transmission line (Lane-Wendson No. 2), the lattice-steel structures are the more visually prominent feature of the right-of-way (Figure 3-7, View 6 and 9).

In the forested visual environment, there is minimal light and glare associated with the existing wood-pole transmission line because it is generally only associated with lighting at the power substations.

View 1: View from Cantrell Road, looking northeast toward the Lane Substation

View 2: View from Cantrell Road, looking southwest

View 3: View from Central Road, looking northwest

View 4: View of Fern Ridge Substation from Territorial Highway, looking east

View 5: View from Territorial Highway, looking west

Figure 3-6. Representative Views of the Project Area and Transmission Line Structures in the Rural/Pastoral Visual Environment

View 6: View from Vaughn Road, looking northeast

View 7: View from OR 126 (near Lane-Wendson No. 1 Structure 17-06), looking southeast

View 8: View from Walker Creek Road (an unpaved road), looking southwest

View 9: View from Old Stagecoach Road, looking southwest

Figure 3-7. Representative Views of the Project Area and Transmission Line Structures in the Forested Visual Environment

Viewers and Visually Sensitive Locations

Viewers along the project area include residents, park visitors, farm employees, motorists, bicyclists, and pedestrians. A viewer's activity typically influences his or her sensitivity to the visual environment and visual change. For example, residential viewers and visitors to parks typically have stationary, longer duration views, and viewing nearby scenery is often an important activity to these viewers. Motorists are typically moving adjacent to, across, or through the project area at relatively high speeds and have shorter duration views. Drivers are likely focused on driving, while passengers may be viewing scenery. Alternatively, bicyclists and pedestrians are moving at low to moderate speeds, have medium-duration views, and part of their activity likely involves viewing scenery.

There are a greater number of residents (sensitive viewers) and residences (sensitive locations) in the rural/pastoral visual environment near the project area, such as in the communities of Veneta and Noti. However, in the forested visual environment near the project area there are the small communities of Walton and Mapleton and other sensitive locations, including Linslaw County Park, Camp Lane Park, Archie Knowles Campground, Mapleton Landing Park, and the Mapleton Pioneer Cemetery. Figure 3-8 shows some representative views from ***visually sensitive locations*** within the forested visual environment.

The project area is located north of Linslaw Park and is not visible from the park. Slightly northwest of Linslaw Park the project area crosses the northern portion of Camp Lane Park. Generally, the tall vegetation in Camp Lane Park obscures views of the project area. However, the project area and transmission line are visible from the open meadow in the north end of the park (Figure 3-8, View 10). The Archie Knowles Campground, located in the Siuslaw National Forest just off of the south side of OR 126, has been closed for several years (USFS 2014). As shown in Figure 3-8, View 11, the project area and wood-pole transmission line structures are not visible from the campground.

As the project area crosses the Siuslaw River into the community of Mapleton it travels near the cluster of businesses located between the river and OR 126 and south of Mapleton Landing Park (Figure 3-8, View 12). Visitors to Mapleton Landing Park would be expected to stay for an extended period of time, and their park experience would include the view of the Siuslaw River and surrounding area. The project area is visible from Mapleton Landing Park. In this location the Lane-Wendson No. 2 transmission line (which is separated from the Lane-Wendson No. 1 transmission line right-of-way at this location) travels closer to Mapleton Landing Park to the north.

Just west of OR 126 is the Mapleton Pioneer Cemetery. The project area travels along the north side of the cemetery and then, just west of the cemetery, turns south to the Mapleton Substation. The project area is barely visible, in the middle ground of the view, looking northeast from the cemetery through a small space between mature evergreen trees (Figure 3-8, View 13). To the northwest of the cemetery the project area is barely visible in the foreground because it is obscured by dense vegetation. The Mapleton Substation is not visible from the Mapleton Pioneer Cemetery or the immediately adjacent residences.

View 10: View from the meadow in the northwest portion of Camp Lane Park, looking northeast

View 11: View from the Archie Knowles Campground in the Siuslaw National Forest, looking northeast

View 12: View from OR 126 at Mapleton, looking northeast

View 13: View from the Mapleton Pioneer Cemetery, looking northeast

Figure 3-8. Representative Views from Visually Sensitive Locations in the Forested Visual Environment

3.8.2 Environmental Consequences—Proposed Action

During construction, there would be temporary, short-term impacts to visual quality in both visual environments (rural/pastoral and forested) and from visually sensitive locations (residences, parks, and the Mapleton Pioneer Cemetery). Overall, these visual impacts would be low because the change in views from construction activities would be of short duration and localized at structures that would be visible by only a small number of viewers (including sensitive viewers).

Impacts to visual quality during construction would be associated with the presence of workers and equipment (e.g., boom cranes, backhoes, augers, and bucket trucks), material stockpiles, debris, signage, staging areas, and the removal and insertion of wood-poles. These construction activities and the associated equipment and stockpiles would add new visual elements, patterns, and solid forms that would be a temporary change to both the rural/pastoral and forested visual environments. Dust disturbed during construction and light and glare emanating from construction sites could also encroach upon adjacent views. The movement of large construction vehicles or potential traffic congestion associated with work areas could intermittently add visually distracting elements to views within both visual environments for short periods. Construction staging areas and equipment and material stockpiles would be removed after construction.

In some locations of the project area the proposed wood-pole structure heights would be increased by approximately 5 to 10 feet to provide better conductor clearance or by 55 to 60 feet to accommodate removal of structures 27/4 and 27/5. This change in height would not be expected to be noticeable in the foreground of a view and would be barely perceptible within the middle ground of a view. In addition, in some locations the wood-pole structures would be replaced with new steel two pole or three pole structures. These new steel structures would have a greater height than the existing wood-pole structures, but would still maintain the slender, narrow pole profile.

Along the entire project area an estimated total of 135 acres of low-growing vegetation would be removed or disturbed within the transmission line right-of-way. Nearby, but outside of the transmission line right-of-way, up to 40 danger trees would be removed. This removal of vegetation and danger trees within or near the project area would not create a noticeable visual change because the existing project area is primarily clear of trees and other vegetation, as is shown in the views in Figure 3-6, Figure 3-7, and Figure 3-8.

Within the rural/pastoral and forested visual environments, access road work would require the removal of approximately 1,218 trees dispersed along many short sections. The visual impact of improving or reconstructing access roads would be low because the road corridor already exists. In a few locations, new access roads would be constructed. In these cases, some mature vegetation would be removed to establish a road corridor, which would have a permanent change to the landscape; this change in the landscape would not be visible to most viewers. Since access roads are or would be gated, most viewers would not be expected to see the temporary construction activity associated with the access road system.

Upon completion of the project, the permanent construction impacts on the visual quality of both the rural/pastoral and the forested visual environment would be low. In both environments, the transmission line would be visually similar to the character and dominance of the existing transmission line as a linear visual element through the landscape. Also, in both the rural/pastoral and forested visual environments the transmission line right-of-way would continue to be visible in the foreground or middle ground of views for a small number of sensitive viewers (residents, park visitors, or visitors to the Mapleton Pioneer Cemetery). In the forested visual environment, because of limited accessibility to the transmission line right-of-way, the topography, and dense stands of evergreen trees, visibility of the transmission line would remain minimal.

3.8.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to visual resources from the Proposed Action:

- Use non-reflective insulators (e.g., non-ceramic insulators or porcelain) to reduce refraction and glare.
- Focus construction lighting on work areas to minimize spillover of light and glare.
- Require that contractors maintain a clean construction site and remove all construction debris.

3.8.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative there would be no change in the existing visual conditions of the project area at this time. Emergency repairs would likely have similar impacts as the construction impacts described in Section 3.8.2.

3.9 Socioeconomics and Public Services

3.9.1 Affected Environment

Population and Community Character

The Rebuild Project runs through unincorporated portions of Lane County on a mix of public and private land that is predominantly agricultural and forested with some rural residential parcels. The project area is located completely outside of city limits and urban growth boundaries, passing south of the City of Veneta and through the unincorporated rural communities of Walton and Mapleton. As shown in Table 3-13, the population of Lane County has grown since 2000. Informal gathering places near the project area include Pop's Smokehouse (near structure 33/1), Alpha Bit Cafe and Mapleton Food and Fuel (both near structure 33/7), and the park and recreation facilities with picnic areas such as Camp Lane Park and Linslaw Park. The southern end of the line terminates at the Wendson Substation in a generally undeveloped area near a small concentration of residences and businesses on the outskirts of the coastal town of Florence, which is less than 5 miles west of the Wendson Substation.

Table 3-13. Population in Lane County and Oregon

Geographic Area	Population 2000	Population 2010	Population Growth Rate 2000–2010
Lane County	322,959	351,715	8.9%
Oregon	3,421,399	3,831,074	12.0%

Source: US Census Bureau, 2000; US Census Bureau, 2010.

Economy, Employment, and Income

Veneta is currently a Rural Oregon Enterprise Zone (2023 termination year), in which businesses income tax and property tax incentives are available for growing or relocating in the zoned area. The enterprise zone serves as a focal point for local development efforts in addition to other business revitalization efforts in the area (Business Oregon 2015).

The largest employment sectors in Lane County are trade, transportation, utilities, local government, and educational and health services. As shown in Table 3-14, the county has seen a small increase in non-farm employment from 2013 to 2014. Lane County has regained nearly half the jobs it lost to the recession of 2008 through 2010. The County's unemployment rate was the same as Oregon's in December 2014 at 6.7 percent (Oregon Employment Department 2015).

Table 3-14. Non-farm Employment and Unemployment Rates in Lane County and Oregon

Geographic Area	Number of Jobs		Change 2010-2011		Unemployment
	December 2010	December 2011	Number of Jobs	Percent	December 2011
Lane County	161,216	164,686	3,470	2.2%	6.7%
Oregon	1,784,442	1,829,501	45,059	2.5%	6.7%

Source: Oregon Employment Department 2015.

The ***median household income, per capita income***, and percent of families and individuals living in poverty in Lane County and Oregon are shown in Table 3-15.

Table 3-15. Income and Poverty in Lane County and Oregon

Geographic Area	Median Household Income (MOE)	Per Capita Income (MOE)	Families Below Poverty Level (MOE)	Individuals Below Poverty Level (MOE)
Lane County	$42,931 (±$803)	$24,224 (±$409)	10.8% (±0.7%)	20.0% (±0.8%)
Oregon	$50,229 (±$278)	$26,809 (±$129)	10.9% (±0.2%)	16.2% (±0.3%)

Source: U.S. Census Bureau 2014, 2009-2013 American Community Survey (ACS) 5-year summary, Table B17021 Poverty Status of Individuals in the Past 12 Months by Living Arrangement, Table S1901 Income in the Past 12 Months, and Table B19301 Per Capita Income in the Past 12 Months.
Notes:
1. ACS data are based on a sample of the total population, so there is a range of uncertainty in the data. There are substantial margins of error (MOE) for smaller geographies. All published ACS MOEs are based on a 90 percent confidence level. The MOE can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the MOE and the estimate plus the MOE (the lower and upper confidence bounds) contains the true value. There is no MOE for decennial census data since it is based on a 100 percent count rather than a sample.
2. The MOE provided by the U.S. Census Bureau can be used to calculate coefficients of variation (CV), which provides an indication of the reliability of ACS data. CVs less than 15 percent are considered generally statistically reliable.
3. The poverty level threshold varies by household size and the age of household members. In 2013, the poverty level for a single individual under 65 years of age was $12,119; for a household of four (two adults and two children), the poverty level was $23,624 (U.S. Census Bureau 2015).

The Oregon and California Railroad Revested Lands Act of 1937 (referred to as the O&C Lands Act) provided that revenues from the sale of timber from the Oregon and California Railroad Revested Lands (O&C lands) would be distributed to certain counties with these O&C lands, including Lane County. Since 2000, these payments have been made under the Secure Rural Schools and Community Self Determination Act (Public Law 06 393), which Congress reauthorized for 2 years on April 16, 2015 (USFS 2015). In 2013, Lane County received $5.46 million in O&C land payments (BLM 2014b).

Public Services, Facilities, and Lodging

Lane County is the primary provider of public facilities and services in the project area, including roads, parks, police protection, fire protection, and medical services. Siuslaw Public Library District services the Mapleton Public Library in the project area. Public water in the project area is provided by various water districts and utility boards (Lane County 2015). Electricity in the project area is provided by Blachly-Lane County Cooperative Electric Association, Central Lincoln Public Utility District (PUD), and Lane Electric (Blachly-Lane 2015; Central Lincoln PUD 2014; Lane Electric 2014). Northwest Natural Gas provides natural gas along the project area (NW Natural 2013). The Crow-Applegate, Eugene, Fern Ridge, Mapleton, and Siuslaw School Districts provide public school services along the project area (Oregon Department of Education 2015).

There is a fiber optic cable attached for the length of the transmission line. In addition, underground utilities, including telephone and natural gas lines, share the BPA right-of-way in some locations (Parsons Brinckerhoff 2013).

Thirty-three hotels in Lane County provide accommodations (ePodunk 2015). In addition, there are approximately 20 recreational vehicle (RV) parks/campgrounds in Lane County, including one in Mapleton and one near the Wendson Substation (RV Clubs U.S. 2015; RV Park Hunter 2014).

Property Taxes and Value

All federal, state, and local government real property is exempt from paying state and local property taxes. When BPA acquires an easement across private property, the landowner continues to pay property taxes but often at a lesser value based on any limitation of use created by the encumbrance.

If BPA acquires new easements on private land, landowners are offered fair market value for the land as established through the appraisal process. The appraisal for each property accounts for all factors affecting property value, including the impact the transmission line easement or access road would have on the remaining portion of the property. Where existing easements accommodate new structure locations or access roads, no additional compensation is paid.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (collectively, ***environmental justice populations***), states that each federal agency shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on ***minority populations*** and ***low-income populations***. The Executive Order further stipulates that agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color, or national origin.

For the purpose of Executive Order 12898, minority populations include all people of the following origins: African-American, American Indian and Alaskan Native, Native Hawaiian or Other Pacific Islander, and ***Hispanic*** (of any race). Low-income populations are populations that are at or below the poverty line, as established by the U.S. Department of Health and Human Services.

The U.S. Department of Energy (DOE) issued an updated Environmental Justice Strategy in May 2008 (DOE, 2008). The strategy integrates the requirements of Executive Order 12898 into the DOE's operations. The four goals set forth in the strategy are:

- Identify and address programs, policies and activities that may have disproportionately high and adverse human health or environmental effects on minority, low-income, and tribal populations.
- Enhance the credibility and public trust of the DOE by further making public participation a fundamental component of all program operations, planning activities, and decision-making processes.
- Improve research and data collection methods relating to human health and the environment of minority, low-income, and tribal populations.
- Further Departmental leadership by integrating environmental justice with activities and processes related to human health and the environment.

The 2010 U.S. Census shows that Lane County has a higher percentage of Caucasians than the state as a whole and a lower percentage of people that report being of Hispanic ethnicity regardless of race than the statewide averages, as shown in Table 3-16 (US Census Bureau, 2010). In Lane County, there is a higher proportion of families and individuals living in poverty than in Oregon, as shown earlier in Table 3-15.

There are two mobile home parks, which may have low-income or minority populations, in south Veneta but outside the project area: Shalimar Mobile Home Park and Country Living Mobile Home Community (Google Maps 2015).

Table 3-16. Race and Ethnicity in Lane County and Oregon

Geographic Area	Race							Ethnicity
	Caucasian (White)	Black or African- American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other race	Two or more races	Hispanic/Latino (of any race)
Lane County	88.3%	1.0%	1.2%	2.4%	0.2%	2.8%	4.2%	7.4%
Oregon	83.6%	1.8%	1.4%	3.7%	0.3%	5.3%	3.8%	11.7%

Source: U.S. Census Bureau, 2010, Table P5 Hispanic or Latino Origin by Race
Note: Individuals who identify themselves as Hispanic or Latino may be of any race, including White.

3.9.2 Environmental consequences—Proposed Action

Population and Community Character

The work force required for construction would vary over the construction period. At a maximum, about 50 to 80 construction workers would be required at a given time. The local population would be expected to return to pre-construction levels upon completion of the project.

Economy, Employment, and Income

Income earned by project construction workers would not be expected to increase the annual per capita or median household income levels in Lane County. Construction of the Proposed Action would, however, create a short-term positive impact to the economic vitality of the communities near the project area, Veneta, Mapleton, and Walton, by temporarily stimulating their economy over the short-term through the purchase of local supplies, materials, food, hotel or campground stays, and other direct or indirect spending by construction workers. Both material purchases and construction workers' salaries would add short-term income.

Public Services and Lodging

Access to all properties, including public services and lodging, would be maintained during construction, and local agencies, residences, and businesses near the project area would be notified of upcoming construction activities and potential disruptions associated with the Proposed Action. The Proposed Action is not expected to affect emergency service providers (e.g., fire and law enforcement) routing or capacity.

The fiber optic cable attached for the length of the line, along with its associated hardware (e.g., ***risers***, ***junction boxes***, etc.), would be transferred to the rebuilt structures. Prior to

construction, the underground telephone lines and natural gas lines would need to be located, and coordination with utility companies would occur to avoid impacts to these utility lines.

Based on existing housing vacancy rates, as well as the number of hotels and RV parks/campgrounds located throughout Lane County, existing local lodging would be expected to be sufficient to accommodate non-local workers during construction.

Property Taxes and Values

Replacement of structures would not require the acquisition of new easements or land from private property owners. All structures would be replaced within BPA's existing right-of-way. Access road work would require acquisition of easements from private property owners, which could result in minor changes to property tax values. Therefore, there could be minor changes in property tax revenues resulting from construction of the Proposed Action.

Environmental Justice

All persons, regardless of race or income, would experience the same low impacts associated with construction of the Proposed Action. These impacts would be expected to be low because construction would be short-term with temporary inconveniences to the residences and businesses located adjacent to the transmission line right-of-way. Furthermore, mobile home parks near the project area would not be affected by the Proposed Action and access to the mobile home parks would be maintained during construction. Residents adjacent to the transmission line right-of-way would be notified of upcoming construction activities and potential disruptions associated with the Proposed Action. Therefore, construction of the Proposed Action would not result in long-term disproportionately high and adverse effects on environmental justice populations.

3.9.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to socioeconomic resources and public services from the Proposed Action:

- Maintain access to all businesses, residences, and public facilities during construction.
- Notify local agencies, residences, and business owners of upcoming construction activities and potential disruptions associated with the Proposed Action.
- Coordinate with utility providers that share BPA's right-of-way to determine the exact locations of utilities and minimize service disruptions to other utility lines.
- Compensate landowners at market value for any new land rights required for new, temporary, or permanent access roads on private lands and apply for applicable permits to obtain new access rights on public lands.

3.9.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the employment and income benefits of construction activities would not occur, and there would be no need for temporary housing for construction workers. Residents and businesses along the transmission line right-of-way would experience noise or air

quality impacts from construction equipment as structures deteriorate and operation and maintenance activities are needed on a more frequent basis.

The No Action Alternative could also result in other socioeconomic impacts. The structures have already exceeded their expected life span, and as they continue to deteriorate, the transmission line's reliability would be reduced. This could increase the risk of outages that could have negative impacts on the social and economic vitality of communities that rely on power supplied by the transmission line. Adverse impacts to all local residents, public facilities, community services, and businesses could include power outages, and voltage fluctuations, resulting in a moderate impact.

3.10 Noise, Public Health, and Safety

3.10.1 Affected Environment

Transmission lines provide electricity for heating, lighting, and other services essential for public health and safety. These same facilities can potentially harm humans. Contact with transmission lines or any electrical line can kill or seriously injure people and damage or destroy equipment. This section describes public health and safety concerns such as noise, hazardous materials, and electric and magnetic fields (EMFs) related to transmission lines or construction activities associated with the Proposed Action.

Noise

The main sources of noise associated with the transmission line include maintenance of the equipment, transmission line ***corona***, and the hum generated by electrical transformers at substations. Transmission line corona generally occurs when atmospheric moisture causes the partial breakdown of the insulating properties around transmission conductors; corona-generated noise is normally only audible from transmission lines with voltages of 230-kV or greater. The Lane-Wendson No. 1 transmission line operates at 115-kV.

Existing noise levels in the project area are characteristic of rural lands with limited areas influenced by urban activities near the towns of Eugene, Walton, and Mapleton, as well as in localized areas where OR 126 and local roads cross the project area. The predominant noise sources in the project area are agricultural equipment and vehicular traffic with periodic noise from transmission line maintenance. ***Noise-sensitive land uses*** located in the vicinity of the project area include residences, parks and trails, RV parks and camp sites, picnic areas, outdoor athletic facilities, the Walton Cemetery and Fire Station, and Mapleton Cemetery and Library. The majority of the project area is located in rural and/or undeveloped areas characterized by low noise levels.

Environmental noise is commonly measured in decibels on the A-weighted scale (dBA or ***A-weighted decibels***). The A-weighted scale corresponds to the sound that humans are able to hear. Typical A-weighted sound levels from various sources are presented in Table 3-17. BPA has established a 50 dBA design criterion for corona-generated audible noise at the edge of the transmission line right-of-way.

Table 3-17. Typical Sound Levels

Noise Source	Sound Level (dBA)
Jet takeoff (at 200 feet)	120
Shout (0.5 feet)	100
Truck (at 50 feet)	80
Gas lawnmower (at 100 feet)	70
Normal conversation (at 10 feet)	60
Traffic (at 50 feet)	50
Library	40
Soft whisper (at 15 feet)	30

Source: EPA 1971; EPA 1974.

Hazardous Materials

Government environmental databases that record the handling, storage, and release of hazardous materials to the environment were reviewed to document existing conditions in the project area. No areas of hazardous material contamination within the project area were identified during the database review. No areas of obvious hazardous material contamination were observed during a site visit (Parsons Brinckerhoff 2013) or reviews of recent, high-resolution aerial photos of the project area. Wood poles treated with chemical preservatives (e.g., Creosote-treated wood poles) are used throughout the project area.

Electric and Magnetic Fields

Transmission lines, like all electric devices and equipment, produce EMFs. Voltage, the force that drives the current, is the source of the electric field. Current, the flow of electric charge in a wire, produces the electromagnetic field. The strength of EMF depends on the design of the line and the distance from the line; field strength decreases rapidly with distance.

EMFs are found around any electrical wiring, including household wiring and electrical appliances and equipment. Electric fields are measured in units of volts per meter (V/m) or thousands of volts per meter (kV/m). Magnetic fields are measured in units of ***gauss*** (G) or milligauss (mG), which are thousandths of a gauss.

Throughout a home, the electric field strength from wiring and appliances is usually less than 0.01 kV/m. However, fields of 0.1 kV/m and higher can be found very close to electrical appliances. Typical magnetic field levels from various household sources are provided in Table 3-18.

Table 3-18. Typical Household Sources of EMFs

Household Source	EMF Strength (mG) at 6 inches	EMF Strength (mG) at 2 feet
Can Opener	500-1,500	3-30
Vacuum Cleaner	100-700	4-50
Microwave Oven	100-300	1-30
Drill	100-200	3-6
Blender	30-100	2-3
Electric Range	20-200	2-9
Fluorescent Lights	20-100	2-8
Computer	7-20	1-3
Washing Machine	4-100	1-6
Coffee Maker	4-10	—
Television	NA	7-20
Hairdryer	1-700	0.1-10

Source: EPA 1992
Notes: Applies to plug-in devices. Dash (—) indicates the measurement at this distance could not be distinguished from background measurements taken before the appliance was turned on. NA indicates no data at this measurement distance.

There are no national guidelines or standards for electric fields from transmission lines. For siting transmission lines under its jurisdiction, the Oregon Energy Facility Siting Council requires that a proposed transmission line be designed and operated so that its electric fields do not exceed 9 kV/m at roughly 3 feet above ground surface in areas accessible to the public (Oregon Administrative Rule [OAR] 345-024-0090). BPA designs transmission lines to meet the electric-field guideline of 9 kV/m maximum on the transmission line right-of-way and 5 kV/m maximum at the edge of the transmission line right-of-way.

Average magnetic field strength in most homes (away from electrical appliances and home wiring, etc.) is typically less than 2 mG. Fields of tens or hundreds mG are present very close to appliances carrying high current. Unlike electric fields, magnetic fields from outside power lines are not reduced in strength by trees and building material. Transmission lines and distribution lines (the lines feeding a neighborhood or home) can be a major source of magnetic field exposure throughout a home located close to the line.

There are no national standards for magnetic fields. Oregon does not have a limit for magnetic fields from transmission lines. BPA does not have a guideline for magnetic field exposures. Guidelines created by national and international organizations range from 833 mG to 9,040 mG for public magnetic-field exposure and from 4,200 mG to 27,100 mG for occupational magnetic-field exposure.

Decades of scientific studies are inconclusive as to whether magnetic fields can potentially cause health effects. Scientific studies and reviews of research on the potential health effects of power line EMFs have found there is insufficient evidence to conclude exposure to either field leads to long-term health effects, such as adult cancer, neurodegenerative diseases (such as Alzheimer's or Lou Gehrig's disease), or adverse effects on reproduction, pregnancy, or growth and development of an embryo. Uncertainties do remain about possible links between childhood

leukemia and childhood magnetic field exposures at levels greater than 3 mG to 4 mG. There are also suggestions that short-term exposures to magnetic fields greater than 16 mG may be related to an increased risk of miscarriage. However, animal and cellular studies provide limited support for a causal relationship between magnetic field exposure and an increased risk of childhood cancer or miscarriage.

3.10.2 Environmental Consequences—Proposed Action

Noise

Construction activities would result in short-term and intermittent higher noise levels as construction progresses through the project area. Noise would result from construction equipment and vehicles used for road work, culvert replacement, vegetation removal, and structure removal and replacement. Helicopters would be used to string a sock line through the structures and deliver construction materials to segments of the transmission line inaccessible to construction vehicles. Table 3-19 contains examples of typical construction vehicles and equipment used for the Proposed Action and the maximum noise levels, in dBA, that they might generate.

Table 3-19. Typical Construction Noise Levels

Type of Equipment	Maximum Noise Level (dBA) at 50 feet
Road grader	80-92
Bulldozer	80-92
Heavy truck	78-90
Backhoe	72-92
Pneumatic tools	82-87
Concrete pump	81-83
Crane	85-88

Source: EPA 1971.

Construction noise may be bothersome to those in the immediate vicinity of the Proposed Action. Construction noise levels at 50 feet from a construction site would range from 72 dBA to 92 dBA with higher temporary-intermittent levels associated with a helicopter used to string a sock line through the structures. Noise produced by construction equipment would decrease with distance at a rate of about 6 dBA per doubling of distance from the site. Based on that assumed attenuation rate, noise-sensitive properties within 400 feet of construction sites could be exposed to daytime noise levels of 74 dBA (less than a truck at 50 feet). Noise-sensitive properties within 800 feet of construction sites could be exposed to daytime noise levels of 68 dBA (less than a gas lawnmower at 100 feet). Noise levels would be further attenuated due to the areas of open space within the project area.

Use of helicopters for conductor stringing would result in noise levels that may exceed 100 dBA for a brief time. Helicopter noise levels are about 106 dBA when operating at 50 feet above ground surface. Noise associated with helicopter use would be temporary and intermittent. It would generally take less than 10 minutes to string the sock line through each structure, and it is

estimated that helicopters would not be in any given line mile for more than 3 hours. Other construction activities at any given location are also expected to be relatively short in duration (approximately one to two days). In addition, implementation of the mitigation measures described in in Section 3.10.3, such as having sound-control devices on construction equipment with gasoline or diesel engines and limiting construction noise to daylight hours (7:00 a.m. to 5:00 p.m.), would reduce noise impacts.

Construction noise associated with new, reconstructed, improved, and temporary access roads and associated tree removal would be temporary. Like construction noise for structure replacement, noise from access road work would be similar to noise from machinery used for agricultural purposes, and nearby residents regularly experience machinery noises from agricultural activities.

Noise from truck traffic and increased worker trips would temporarily contribute to existing traffic noise on local roads and highways, but is not expected to result in a substantial increase in average traffic noise levels, resulting in low impacts.

Noise impacts from construction of the Proposed Action would be low for the rural portions of the project area because these areas are located away from noise-sensitive uses and regularly include machinery noise from agricultural practices, so it is unlikely that there would be a perceived change in overall noise levels. Where the portion of the Proposed Action would be constructed adjacent to the noise-sensitive land uses (described in Section 3.10.1), impacts would be low to moderate because residents and recreational users are present in these areas and noise levels during construction would exceed ambient noise levels.

Table 3-20 provides the calculated corona noise levels for the transmission lines under existing conditions and after implementation of the Proposed Action. Under the Proposed Action, corona noise from the transmission lines would not change from current levels and noise that could be generated during maintenance activities would not change. The transmission lines would remain compliant with applicable state noise regulations.

Table 3-20. Transmission Line Right-of-way Audible Noise (dBA, wet conditions)

	Northern Right-of-way Edge	Maximum on Right-of-way	Southern Right-of-way Edge
Existing Conditions	40.1	45.4	40.9
Proposed Action	40.1	45.4	40.9

Notes: Values developed from BPA modeling programs and are based upon a 200-foot right-of-way with 115-kV line.

Hazardous Materials

BPA would dispose of creosote-treated wood poles in accordance with federal and state laws, so impacts would be low. Unknown hazardous materials could potentially be disturbed during construction of the Proposed Action, resulting in an unexpected release to the environment and likely a temporary impact to public health and safety of nearby residents. Construction activities associated with the Proposed Action could involve the use of small amounts of solvents, pesticides, paint products, motor and lubricating oils, and cleaners, which could be released into

the environment. If any of these materials are spilled, BPA would immediately contain and clean up the spill and dispose of all regulated materials in accordance with federal and state laws. Impacts resulting from a hazardous materials release to soil or groundwater during construction would likely be low because of the implementation of mitigation measures discussed in Section 3.10.3.

Electric and Magnetic Fields

The primary parameters that affect the EMF levels produced by a power line are line voltage, current loading, line configuration, and line routing. The Proposed Action would not appreciably change any of these parameters. Therefore, generally speaking, no impacts to the EMF levels in the vicinity of the transmission line would occur except in a few isolated cases where structure heights would be raised slightly to increase the conductor-to-ground clearances or to accommodate removal of structures 27/4 and 27/5. In these areas, ground-level EMF would decrease slightly within the transmission line right-of-way. No changes are expected beyond the transmission line right-of-way. BPA would continue to meet the state electric field regulations for transmission lines.

EMF levels for the Proposed Action are shown in Table 3-21 and Table 3-22. The data illustrate that the Proposed Action would result in very little change to the EMF environment on the right-of-way.

Radio and television interference from high voltage power lines can be produced from two general sources: conductor corona activity and ***spark-discharge activity*** on connecting hardware. Conductor corona activity is primarily a function of the operating line voltage, while spark-discharge activity on connecting hardware is usually associated with the aging condition of hardware (e.g., over time, hardware connections can become loose and corroded causing small spark-gaps). However, BPA rarely receives public complaints of radio and television interference from BPA transmission lines operating at this voltage.

Table 3-21. Transmission Line Right-of-way Electric Field Values (kV/m)

	Northern Right-of-way Edge	Maximum on Right-of-way	Southern Right-of-way Edge
Existing Conditions	0.3	3.8	0.5
Proposed Action	0.3	3.8	0.6

Notes: Values developed from BPA modeling programs and are based upon a 200-foot right-of-way with 115-kV line.

Table 3-22. Transmission Line Right-of-way Magnetic Fields

	Northern Right-of-way Edge		Maximum on Right-of-way		Southern Right-of-way Edge	
	Annual Average (mG)	Annual Peak (mG)	Annual Average (mG)	Annual Peak (mG)	Annual Average (mG)	Annual Peak (mG)
Existing Conditions	4.7	7.8	24.6	67.4	8.4	16.7
Proposed Action	4.7	7.8	24.6	67.4	8.4	16.7

Notes: mG based on 2011-2012 line load statistics. Values developed from BPA modeling programs and based upon a 200-foot right-of-way with 115-kV line.

The operating voltage of the Proposed Action would be the same as the existing operating line voltage. Additionally, the Proposed Action would add new, properly-installed connecting hardware that would reduce any risk associated with aging hardware spark-discharge activity. Thus, the Proposed Action would either not change or possibly reduce the potential for radio and television interference along the transmission line. Nevertheless, any radio or television interference complaint received by BPA would be investigated. If BPA facilities are determined to be the cause of the interference, BPA would take corrective action to eliminate the interference.

3.10.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential noise, hazardous materials, and EMF impacts from the Proposed Action:

Noise

- BPA would implement BMPs for the use of sound-control devices on construction equipment with gasoline or diesel engines and limit construction noise to daylight hours (7:00 a.m. to 5:00 p.m.), to reduce noise impacts.

Hazardous Materials

- BPA would implement spill prevent and response BMPs to avoid, minimize, or mitigate impacts to public health and safety from the Proposed Action.

Electric and Magnetic Fields

- No avoidance, minimization, or mitigation measures are proposed.

3.10.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, there would be no construction impacts (e.g., noise, potential releases of hazardous materials, etc.); however, impacts to public health and safety would be moderate. The existing line is at high risk of failure due to aging components and deteriorating wood-pole structures. Local and regional power outages could result from failure of this line, which could put public safety agencies, health providers, and businesses that rely on a steady source of power at risk. Any downed lines resulting from structure failures would have a high potential for causing fires in the vicinity of the downed line or electrocution as a result of accidental or inadvertent contact with an energized, downed line.

If the Proposed Action is not implemented, the existing structures would continue to deteriorate and require continual maintenance, which would impact nearby noise-sensitive land uses. Higher noise levels produced during normal maintenance activities would temporarily result in a moderate impact in areas where residents are present. Increased noise levels associated with these activities in any one location would be temporary, but could occur outside of daylight hours for emergency maintenance.

3.11 Transportation

3.11.1 Affected Environment

The transmission line is accessed by a series of gravel and paved county roads where existing traffic volumes are generally low. The project area does not cross any larger state or federal highways that experience higher traffic volumes, such as Interstate 5. However, the project area crosses two Oregon state highways, OR 126 and Oregon Route 200 (OR 200). The line crosses OR 126 nine times and also crosses OR 200 once in Veneta, Oregon. In addition, the transmission line right-of-way crosses the Union Pacific Railroad three times. In the western half of Lane County, the transmission line right-of-way closely follows OR 126.

The project area passes through unincorporated portions of Lane County and runs nearby, but not through, the incorporated City of Veneta. Streets in the unincorporated areas are generally low volume rural roadways. The transmission line ends at the Wendson Substation, less than 5 miles east of the coastal town of Florence.

Several county roads provide access to the project area, particularly roads that extend off OR 126. City streets in Veneta provide some limited access to the transmission line. In addition, BPA maintains access roads across public and private lands so that maintenance crews can get to the transmission line right-of-way in areas where state, county, and local roads do not provide access.

3.11.2 Environmental Consequences—Proposed Action

During project construction there would be a temporary increase in traffic on nearby roads from construction vehicles delivering equipment and materials. Deliveries of equipment and materials to construction areas would cause short-term traffic delays along nearby roads and state highways. However, due to the rural and generally undeveloped nature of the project area, impacts to roadway users due to construction of the Proposed Action would be low. In addition, most access roads are currently gated and not used by the general public, or would be gated if requested by the underlying landowner. BPA would communicate with underlying landowners to coordinate access, roadwork, and use so as not to impede personal or administrative uses of these roads.

At roadway crossings, project construction could temporarily affect traffic flow through lane closures. Project construction near OR 126 and OR 200 could require closure of one traffic lane for short periods (one to three hours) while structures are being replaced. Traffic delays could also be experienced at roads near construction staging areas, but these would be temporary and limited to the vicinity of staging areas. Construction equipment would be parked adjacent to local roads and highways to avoid blocking access, where feasible.

3.11.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to transportation from the Proposed Action:

- Maintain existing access to residences and other areas during construction.

- Prepare a notice about construction activities and a proposed schedule for posting on the Oregon Department of Transportation's (ODOT) traffic advisory web site called Trip Check (http://www.tripcheck.com).
- Schedule construction activities at the transmission line crossings of OR 126 so as to avoid lane closures during peak travel times, as determined in coordination with ODOT.
- Schedule road improvement and transmission line rebuild activities at the transmission line crossings at Parcel ID 180703000100 on BLM land so as to not preclude operations of active timber sale (2014-2017) in T18S R07W, Section 03, as determined in coordination with BLM and timber sale purchaser.
- Use traffic safety signs and flaggers to inform motorists and manage traffic during construction activities on affected roads.
- Notify affected landowners where and when construction would occur and the potential for traffic delays. In the letter, provide information on any alternative transportation routes, if available, during project construction.

3.11.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the transmission line components, including structures and other existing equipment, would not be replaced resulting in no construction traffic at this time. However, due to the need for continued maintenance under the No Action Alternative, intermittent traffic increases may occur from maintenance vehicles accessing areas of the transmission line in need of repair. Temporary closures and periodic disruptions to traffic flow from continued maintenance of the line would occur as additional maintenance requirements are needed or when emergency repairs would be needed.

3.12 Air Quality

3.12.1 Affected Environment

The project area for air quality includes the airshed of Lane County. The agencies with primary air quality jurisdiction in Lane County are EPA, Oregon Department of Environmental Quality (Oregon DEQ), and the Lane Regional Air Protection Agency. EPA has identified several air pollutants as a concern nationwide. These pollutants, known as "criteria pollutants," are carbon monoxide, ***particulate matter (PM)*** with a diameter of 10 micrometers or less (***PM-10***), ozone, sulfur dioxide, lead, and nitrogen dioxide. Under the Clean Air Act (42 USC § 7401 *et seq*.), EPA has established ***National Ambient Air Quality Standards (NAAQS)*** that specify maximum allowable concentrations for each of the six criteria pollutants. An area that fails to meet the standards established by EPA for any criteria pollutant is designated a ***nonattainment*** area. If a nonattainment area meets the EPA standards for the criteria pollutant in question, then the area is designated a ***maintenance area*** after a maintenance plan has been established to keep the area within the standards approved by EPA. Oregon DEQ and Lane Regional Air Protection Agency have adopted the standards set by EPA.

The eastern limit of the project area is located approximately one mile west of the Eugene-Springfield urban growth boundary (UGB), which is designated as a maintenance area for PM-10 and a maintenance area for carbon monoxide. The Lane Regional Air Protection Agency oversees air quality conditions and enhancement programs in the cities of Eugene, Springfield, Cottage Grove, and Oakridge, and the Eugene-Springfield UGB (Lane Regional Air Protection Agency 2012). The Lane Regional Air Protection Agency recently approved the re-designation of the Eugene PM-10 maintenance area as in "attainment" with the PM-10 air quality health standard. EPA approved the re-designation request on April 11, 2013, effective June 10, 2013 (78 FR 21547). A contingency plan is in place for the Eugene-Springfield UGB for PM-10 that restricts emissions from uses such as wood-waste boilers, veneer dryers, kraft pulp mills, air conveyance systems, and open burning.

Air quality issues related to the operation of the transmission line are generally only affected by low levels of ozone and nitrogen oxides, which are created during normal operations. Of the six criteria pollutants, PM generated by maintenance vehicles during routine maintenance is of primary concern, with carbon monoxide and ozone of lesser concern.

3.12.2 Environmental Consequences—Proposed Action

Construction of the Proposed Action would result in temporary higher levels of PM during structure replacement, conductor stringing, and other ground-disturbing activities. Dust could be created in localized areas for short durations. Construction equipment would disturb dirt on roads and emit pollutants, resulting in low-level impacts to local air quality and visibility for short durations. The Proposed Action would result in short-term and localized emissions from internal combustion engines during construction. Low-growing vegetated areas that are disturbed during construction would be revegetated.

Overall, air quality impacts resulting from construction would be low because these impacts would be limited to the construction site, would be temporary in nature, and would not produce enough dust and contaminants to result in violations of air quality standards.

3.12.3 Mitigation Measures

The following mitigation measures are identified to avoid, minimize, or compensate for potential impacts to air quality from the Proposed Action:

- Use water trucks to control dust during construction.
- Keep all vehicles in good operating condition to minimize exhaust emissions.
- Turn off construction equipment during prolonged periods of non-use.

3.12.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, construction-related impacts to air quality would not occur at this time. However, routine maintenance of the existing transmission line would continue to have low-level impacts on air quality, primarily from dust and vehicle emissions as these impacts would be localized, temporary in nature, and would not result in violations of air quality

standards. Short-term generation of dust and vehicle and equipment emissions would occur along the transmission line during routine maintenance activities.

3.13 Greenhouse Gases

3.13.1 Affected Environment

Greenhouse gases are chemical compounds found in the earth's atmosphere that absorb and trap infrared radiation, or heat, re-radiated from the surface of the earth. The trapping and build-up of heat in the atmosphere increases the earth's temperature, warming the planet and creating a greenhouse-like effect (U.S. Energy Information Administration [EIA] 2015). ***Anthropogenic*** activities (activities caused or produced by humans) are increasing atmospheric concentrations to levels that could increase the earth's temperature up to 11.5 degrees Fahrenheit (°F) by the end of the 21st century (U.S. Global Change Research Program 2009).

The principal greenhouse gases emitted into the atmosphere through human activities are carbon dioxide, methane (CH4), nitrous oxide (N2O), and fluorinated gases (EPA 2015b). Of these four gases, carbon dioxide (CO2) is the major greenhouse gas emitted (EPA 2015b). For example, CO2 emissions from the combustion of coal, oil, and gas constitute 81 percent of all United States greenhouse gas emissions (EIA 2011). Carbon dioxide enters the atmosphere primarily through the burning of fossil fuels such as coal, natural gas and oil, and wood products; as a result of land use changes; and the manufacturing of cement. Prior to the industrial revolution, concentrations were roughly stable at 280 parts per million (ppm), but have increased 36 percent to 379 ppm in 2005, all of which is attributed to human activities (Intergovernmental Panel on Climate Change [IPCC] 2007).

Of the remaining three principal greenhouse gases, methane is emitted during the production and transport of fossil fuels, through intensive animal farming, and by the decay of organic waste in landfills. Methane concentrations have increased 148 percent above pre-industrial levels (EPA 2015b). Nitrous oxide is emitted during agricultural and industrial activities, and during the combustion of fossil fuels and solid waste. Nitrous oxide atmospheric levels have increased 18 percent since the beginning of industrial activities (EPA 2015b). Fluorinated gases, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6) are synthetic compounds emitted through industrial processes and now are being used to replace ozone-depleting compounds such as chlorofluorocarbons in insulating foams, refrigeration, and air conditioning. Although they are emitted in small quantities, these gases have the ability to trap more heat than carbon dioxide and are considered high global-warming potential gases. Atmospheric concentrations of fluorinated gases have been increasing over the last two decades and are expected to continue to increase (EPA 2015b).

The Clean Air Act is a federal law that establishes regulations to control emissions from large generation sources such as power plants. EPA has issued a Final Mandatory Reporting of Greenhouse Gases Rule (40 CFR 98) that requires reporting of greenhouse gas emissions from large sources. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 ***metric tons*** or more per year of greenhouse gases, are required to submit annual reports to EPA (EPA 2015a). For

federal agencies such as BPA, Executive Orders 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, and 13514, *Federal Leadership in Environmental, Energy and Economic Performance*, require agencies to measure, manage, and reduce greenhouse gas emissions by agency-defined target amounts and dates.

In Oregon, House Bill 3543 from 2007 (codified at Oregon Revised Statutes 468A.205), directs state and local governments, businesses, nonprofit organizations and individual residents to reduce greenhouse gas emissions in Oregon. This statute sets several reduction targets: 1) by 2010, arrest growth of greenhouse gas emissions; 2) by 2020 begin to reduce greenhouse gas levels to 10 percent below 1990 levels; and 3) by 2050 achieve greenhouse gas levels at least 75 percent below 1990 levels (Oregon Global Warming Commission 2015).

Global atmospheric greenhouse gas concentrations are a product of emissions and removal over time. Soils store carbon in the form of decomposing plant materials and constitute the largest carbon reservoir on land. Through the process of photosynthesis, atmospheric carbon is also captured and stored as ***biomass*** in vegetation, especially forests. Vegetation removal can impact the carbon cycle. The carbon cycle consists of two phases: gaseous carbon (carbon dioxide) and solid carbon (sugars). Photosynthesis is the process plants such as trees use to sequester carbon dioxide from the air and subsequently manufacture solid, organic mass. Consequently, as trees grow and increase in mass, carbon is removed from the atmosphere. Inversely, as trees decay or are burned, carbon is emitted into the atmosphere.

Based on the carbon cycle, trees act as temporary carbon reservoirs. In a natural environment, a tree seed would grow (sequester carbon), the tree would die and decay (release gaseous carbon), and subsequently a new tree would presumably grow in its place. Essentially, the quantity of carbon stored in solid, organic mass is dependent on the current phase of the carbon cycle. Peak solid carbon storage occurs when a tree is fully mature, and minimum solid carbon storage occurs immediately after the tree has decomposed or burned. Alternatively, minimum solid carbon storage may occur when a forested area is permanently converted to a non-forested area, such as grasslands.

Stored carbon can be released back into the atmosphere when biomass is burned. In addition, carbon dioxide, nitrous oxide, and methane emissions increase in areas where soil disturbance occurs (Kessavalou et al. 1998). Models predict atmospheric concentrations of all greenhouse gases would increase over the next century, but the extent and rate of change is difficult to predict, especially on a global scale.

3.13.2 Environmental Consequences—Proposed Action

Implementation of the Proposed Action would contribute to greenhouse gas concentrations in several different ways. Carbon dioxide, methane, and nitrous oxide emission levels would incrementally increase as vegetation and soils are removed or disturbed during construction of the transmission line and through the operation of construction-related vehicles during the construction period.

Emissions from construction, operations, and maintenance-related vehicles on and off the project area also would impact atmospheric greenhouse gas concentrations incrementally

because construction equipment and vehicles would be fueled by gasoline and diesel combustion motors.

The total amount of greenhouse gas emission from the Proposed Action, including construction equipment, possible danger tree removal, and tree removal for access road work, would be low at approximately 5,562 metric tons of ***carbon dioxide equivalent***. This equates to less than 0.004 percent of the 154,630,000 metric tons of carbon dioxide emitted in 2013 in BPA's four-state service territory and is below EPA's 25,000 metric tons reporting threshold (EPA 2015c). The individual components of the total greenhouse gas emissions are described below.

Greenhouse gas emissions were estimated for the Proposed Action based on the approximate number of vehicles to be used during project construction and the approximate distance those vehicles would travel during the construction period. For the Proposed Action, an average of eight construction vehicle round trips per day would occur during the peak construction periods for the Proposed Action. Construction would take about 300 days, with peak construction activity likely occurring during the 5-month period between late spring and early fall in both 2016 and 2017.

To provide a conservative analysis and ensure that the Proposed Action's potential contribution to greenhouse gas concentrations are adequately considered, greenhouse gas emissions were calculated for the entire project duration using an average of eight construction vehicle round trips per day. A round trip for the Proposed Action was considered to be from Eugene-Springfield area to the midpoint of the transmission line near the Walton Substation and back to Eugene-Springfield area (about 42 miles). Because of the need to access some of the towers by helicopter for the Proposed Action, an estimated 50 round trips between the Eugene airport and the helipad near Tower 32/4 would be required. Each helicopter round trip would be about 70 miles.

As shown in Table 3-23, construction vehicle emissions would result in an estimated 207 metric tons of carbon dioxide emissions and an estimated 209 metric tons of carbon dioxide equivalent for the entire 2-year construction period. The Proposed Action's estimated carbon dioxide equivalent emissions translate roughly to the annual carbon dioxide emissions of 38 passenger vehicles.

Table 3-23. Estimated Greenhouse Gas Emissions from Construction Vehicle Emissions for the Proposed Action

Activity	CO_2 Emissions in Metric Tons	CH_4 (CO_2 Equivalent Emissions) in Metric Tons	N_2O (CO_2 Equivalent Emissions) in Metric Tons	Total CO_2 Equivalent Emissions in Metric Tons
Construction Vehicle Emissions	206.6	0.2	2.2	209.0

Measuring emissions from soil disturbances is difficult because these emissions are short-lived and return to background levels within several hours (Kessavalou et al. 1998). Based on the conservative methodology used to estimate construction vehicle emissions, the emissions related to soil disruption and annual vegetation decay are accounted for in the overall

construction emission rates. Carbon that would be stored in removed vegetation would be offset in time by the growth and accumulation of carbon in soils and new vegetation.

Structure replacement could require removal of an estimated 40 danger trees. Removal of the danger trees could occur either during or after structure replacement. The nature of tree removal is to permanently convert land within the BPA easement to a non-forested area. Therefore, this action can be characterized as permanently maintaining the existing BPA easement at the minimum level of carbon storage.

The greenhouse gas emissions from tree removal can be broken down further into three segments: 1) carbon that has the potential to be released from the existing trees; 2) loss of future ***carbon sequestration*** that would have occurred if each tree continued to grow to full maturity; and 3) energy consumed while removing the trees from the soil.

For the tree removal carbon estimation, BPA assumes:

- All of the trees are mixed hardwoods.
- The average moisture content of a green tree is assumed to be 30 percent.
- About 50 percent of a tree's dry-mass is comprised of carbon.
- All of the carbon would eventually be oxidized into carbon dioxide and emitted into the atmosphere.
- The above ground biomass of the tree increases with increasing size as expressed a measurement of the tree's diameter at breast height (dbh).
- Seventy-seven percent of the trees are 16 inches dbh or smaller.

Due to the wide variety of sizes of trees along the transmission line (less than 6 inches to greater than 28 inches), biomass was estimated for a number of different sized trees. Table 3-24 presents the biomass and total carbon dioxide equivalent for the various sized trees proposed for removal.

Table 3-24. Carbon Dioxide Equivalent Released from Tree Removal for Construction of the Proposed Action

dbh	Total Aboveground Tree Biomass for an Individual Mixed Hardwood Tree (kilograms)	Number of Trees per dbh Proposed for Removal	CO_2 Equivalent Released by Decomposition of Existing Trees in Metric Tons	CO_2 Equivalent of Future Sequestration at Final Size—28 Inches dbh in Metric Tons
6"	73	287	15	1,226
8"	148	228	24	974
10"	258	147	27	628
12"	406	143	41	611
14"	595	103	43	440
16"	829	79	46	338

dbh	Total Aboveground Tree Biomass for an Individual Mixed Hardwood Tree (kilograms)	Number of Trees per dbh Proposed for Removal	CO_2 Equivalent Released by Decomposition of Existing Trees in Metric Tons	CO_2 Equivalent of Future Sequestration at Final Size—28 Inches dbh in Metric Tons
18"	1,111	64	50	273
20"	1,444	64	65	273
21" - 24"	2,270	88	140	376
25" - 28"	3,329	50	117	214
>28""	6,215	24	104	0
Total	16,679	1,277	670	5,353

Tree growth and future carbon sequestration rates are highly variable and depend on several factors including the species of tree, age of the tree, climate, forest density, and soil conditions. As an alternative to estimating tree growth rates, mass balance may be estimated. As shown in Table 3.13.2, the existing biomass of trees along the transmission line facility varies considerably. Most of the trees within the project area are 24 inches or less in dbh; consequently, BPA assumed each tree would reach 28 inches dbh at full maturity and that the trees already at or above 28 inches dbh are at full maturity and would not sequester additional carbon. This is a conservative estimate because some trees may not reach full maturity due to natural attrition. Using the same assumptions listed above, each remaining tree that reaches 28 inches dbh would have a mass of 3,329 kilograms and would sequester approximately two metric tons of carbon dioxide equivalent. The 1,203 trees that have not reached full maturity would have sequestered approximately 5,353 metric tons of carbon dioxide equivalent. This equates to less than 0.004 percent of the 154,630,000 metric tons of carbon dioxide emitted annually in BPA's four-state service territory and is below EPA's 25,000 metric tons reporting threshold (EPA 2015c). Therefore, the overall impact on greenhouse gases would be low. Calculations in Table 3.13.2 considered both the decomposition of the existing trees that would be removed as well as the future carbon sequestration that the removed trees would have provided.

Removal and disposal of each tree is an energy-consuming process that results in greenhouse gas emissions via fuel combustion. This component of greenhouse gas emissions, however, was considered negligible when compared to transmission line construction.

3.13.3 Mitigation Measures

There are no mitigation measures specific to greenhouse gas impacts.

3.13.4 Environmental Consequences—No Action Alternative

Under the No Action Alternative, construction-related greenhouse gas emission impacts would not occur at this time. Greenhouse gas emissions related to construction vehicle trips would be avoided. However, vehicle emissions for operation and maintenance activities would likely be greater than what was presented for the Proposed Action because BPA would likely make more

frequent trips to maintain the deteriorating structures. Overall, the impact on greenhouse gases would be low.

3.14 Cumulative Impacts

Cumulative impacts are the impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Sections 3.1 through 3.13 of this chapter present information about present environmental conditions and the environmental and socioeconomic consequences of implementing the Proposed Action or No Action Alternative. This Section addresses the cumulative impacts of the Proposed Action when combined with other past, present, and reasonably foreseeable future actions.

3.14.1 Identification of Present and Reasonably Foreseeable Future Actions

The cumulative impacts analysis of this Proposed Action does not include an exhaustive list of individual past actions and instead, focuses on the impacts of existing projects, including the past impacts of those projects.

The nature and extent of existing development due to past and present actions in the vicinity of the Proposed Action is largely described earlier in this chapter in the affected environment sections for each environmental resource. In addition to BPA's access road and vegetation management work for the existing transmission line, past actions that have adversely affected natural and human resources in the transmission line right-of-way include agricultural activities, timber harvests, and highway and railroad construction. Reasonably foreseeable future actions include:

- Ongoing USFS activities throughout the Siuslaw National Forest, including restoration projects within the Lower Siuslaw River watershed, timber regeneration and harvest; road, trail, and campground maintenance; weeds/invasive plant treatment; wildlife habitat rehabilitation; railroad maintenance activities; fire management activities for wildfires and prescribed burns; and fisheries management activities.
- Ongoing maintenance of recreation areas throughout the Siuslaw National Forest, including possible re-opening of the USFS Archie Knowles Campground outside Mapleton.
- Forestry activities on private lands, including timber harvests, planting, thinning, and other management activities. Private timber harvests provide notice to Oregon Department of Forestry.
- Continued operation and maintenance of local electric lines and substations, including Blachly-Lane County Cooperative Electric Association, Central Lincoln PUD, and Lane Electric.

- USACE management of Fern Ridge Lake, an USACE flood control project approximately 0.5 mile north of the project area, including flood control activities such as winter drawdown and vegetation management.
- Ongoing BLM Eugene District management activities for public lands under their control through sustainable harvesting and thinning of forest lands, invasive vegetation treatments, habitat restoration, and maintenance of recreational lands.
- Lane County roadway improvements, including Stagecoach Road, Vaughn Road, and Bolton Hill Road, and an update of the Lane County Transportation System Plan.
- Lane County's road maintenance and projects, including several planned projects on Territorial Highway (OR 200) near Veneta, adding bike-pedestrian improvements to OR 126 West near Mapleton, and rural modernization projects along OR 126.
- ODOT's *Highway 126: Fern Ridge Corridor Plan* to enhance the safety and function of OR 126 between the cities of Veneta and Eugene.
- ODOT's *Oregon 126: Expressway Management Plan*, to address the congestion issues along OR 126.
- Other state and county road maintenance activities, such as paving, slope stabilization, and culvert replacement could also occur in the project area.
- BPA's continued operation and maintenance of transmission lines in and near the project area. Routine work may include hardware replacement, vegetation management, danger tree removal, and minor access road work.
- Agricultural activities on private lands, such as grass seed farming, grazing, and forest management adjacent to the project area would continue into the foreseeable future.
- Potential limited rural residential and commercial development near the unincorporated town of Mapleton and in areas zoned for rural development near the City of Veneta.
- Siuslaw Watershed Council's restoration projects throughout the Siuslaw watershed and the Long Tom Watershed Council's restoration projects through the Long Tom watershed.
- The City of Eugene's wetland mitigation bank programs, including the Coyote Prairie North Wetland Mitigation Bank project and the West Eugene Wetlands plan.
- Ongoing operation and maintenance of the transmission line by BPA.

3.14.2 Cumulative Impacts

This project, in combination with past, present, and reasonably foreseeable actions, could potentially result in cumulative impacts to the natural, physical, and socioeconomic resources described in this EA. The following analysis describes these potential cumulative impacts, in the order that the resources are previously presented in this chapter.

Land Use and Recreation

Land use and recreation along the project area have incrementally changed due to past and present development, and this trend is expected to continue. Wood-pole structure replacement would have a low cumulative impact on recreation because construction impacts, such traffic delays, noise, and dust, would be temporary and no structures would be replaced on park and recreation lands.

Conversion of approximately 0.22 acres of land from existing land uses (primarily forestry) to 0.6 mile of new access trails outside of BPA's existing right-of-way in combination with other past, present, and reasonably foreseeable development projects would have a low cumulative impact on land use because new access trail segments would be relatively short and would not prohibit the remainder of the property from continuing to be used for forestry. Further, many of these road segments would be located near the perimeter of the property, so they would not bisect existing agricultural activities.

Geology and Soils

The principal past and ongoing activities that affect geology and soils in the vicinity of the project area are related to forest management and agricultural activities, and to a lesser extent, residential and commercial development. The area of geology and soils impacted by the Proposed Action is relatively small compared to the area affected by other ongoing activities in the area such as forestry and agriculture. Therefore, the Proposed Action would have a low cumulative impact on geology and soils.

Vegetation

Past and present transmission line clearing and tree removal, access road construction and maintenance, agriculture, grazing, forestry, and development have resulted in changes in the composition of vegetation in the project area. Reasonably foreseeable future actions, such as BPA's vegetation management and removal of danger trees and ***trees within the right-of-way***, ongoing agriculture and forest management, and development, would continue to impact vegetation.

The Proposed Action would have low impacts to vegetation, both in uplands and wetlands, modifying existing vegetation species cover, distribution, and dominance. Anticipated post-construction conditions within the project area would include reductions in the adjacent overstory canopy and altered succession profiles that would result from removal of selected trees. Following tree removal, the remaining trees and shrubs may experience accelerated growth into the newly available crown habitat.

Past and present activities in the project area have led to a spread of noxious weeds throughout the project area, which could continue with reasonably foreseeable future actions. Although mitigation measures have been identified in Section 3.3.3 that would minimize the spread of noxious weeds by the Proposed Action, it is possible that impacts would still occur. Thus, the Proposed Action could contribute to a low cumulative impact on vegetation through the spread of noxious weeds as well as the modification of existing vegetation.

Streams and Fish

Activities other than the Proposed Action in the vicinity of the project area have the potential to impact water quality and fish through erosion and overland transport of suspended sediments to streams downstream of these operations. These activities include past, present, and future rural residential and commercial development; agricultural operations, including farming and the raising of livestock; forest management; ongoing road and bridge maintenance; railroad use and maintenance; and BPA's danger tree removal program.

Reasonably foreseeable future projects likely would result in additional impacts on water quality. The major cumulative impacts to streams in the vicinity of the project area would continue to be from agriculture, forest management, road and railroad maintenance activities, and utility corridor maintenance. However, improvements to streams would be made through habitat improvement projects in the watersheds crossed by the project area as stream enhancement projects are implemented and as stream barriers are removed as part of the Proposed Action and other road and railroad maintenance projects.

The Long Tom Watershed Council is currently involved with habitat restoration projects for streams within the Upper Willamette Watershed and the Siuslaw Watershed Council is currently involved in habitat restoration for the rivers and streams within the Siuslaw Basin. Because the anticipated post-construction conditions within the project area would be similar to existing conditions, the Proposed Action would have low impacts on streams from ground-disturbing activities, as discussed in Section 3.4. These impacts would be mitigated through the implementation of mitigation measures and BMPs described in Section 3.4.3.

Cumulative impacts to fish and fish habitat in the project area include past and current impacts from agriculture, road and railroad construction and maintenance, culvert installation, grazing, forest management, altered flow regimes, and reduced water quality as a result of human development. Stream and habitat alteration, including short-term localized sediment inputs to steams, would continue to occur because of ongoing harvest, road-related activities, and the other above-mentioned activities. However, long-term sediment reduction due to the proposed road and drainage improvements would benefit localized stream conditions and fish habitat, while culvert and bridge replacements would remove fish passage barriers, providing new access to upstream habitat.

These activities and other reasonably foreseeable future actions would likely continue to affect fish. Impacts to fish through in-water work, temporary and permanent access road construction (including culverts and bridges), temporary construction disturbance, and both general vegetation and tree removal within the project area would be low to moderate. These impacts from the Proposed Action and ongoing past, present, and reasonably foreseeable future actions would contribute to cumulative impacts on fish that would be low to moderate.

Wetlands, Floodplains, and Groundwater

Waters and Wetlands

Waters and wetlands throughout Oregon have experienced incremental losses and degradation over time. Within the project area, some wetlands likely were previously impacted by

construction of the existing line, access roads, and placement of structures in wetlands. Wetland impacts also occurred and could be expected to continue to occur from agricultural activities and development. Future projects in the vicinity would be required to avoid, minimize, and compensate for any potential impacts to wetlands under federal and state laws, but could still contribute to a cumulative loss of function or value at the local level. The Proposed Action would result in some temporary disturbance to wetlands and waters; however, temporary disturbance would be mitigated as described in Section 3.5.

Of the total permanent impacts to wetlands/waters (approximately 2.57 acres), most would be mitigated by either purchasing wetland mitigation bank credits and onsite waters enhancements. The remaining impacts do not require mitigation at either the federal or state level and would therefore represent a cumulative loss. The Proposed Action would therefore contribute incrementally to cumulative impacts to wetlands on a regional and local scale.

Floodplains

Past and present cumulative actions in the vicinity of the project area have impacted floodplains through development and disturbances. Lane County has a Floodplain Combining Zone (Lane County 2014), which regulates development in floodplains. Despite these regulations, impacts to floodplain functions could be expected to continue at a low to moderate level through continued development. Replacement of the transmission structures would not change floodplain function as existing structures would be replaced by new structures using the same approximate footing locations. Access road work would contribute to a cumulative impact on floodplain function through the introduction of fill, removal of vegetation, and potential sedimentation. The cumulative impact of the Proposed Action and other past, present, and reasonably foreseeable projects on floodplains would be low to moderate, depending on the size of the floodplain and the scale of activity.

Groundwater

The cumulative impacts related to the reduction or contamination of groundwater would be highly variable depending on the type and location of other projects and their relation to groundwater resources. In general, mining projects have the highest potential to heavily affect groundwater resources. Land development, railroads, and agriculture may also greatly impact groundwater resources. In contrast, highways, transmission lines, and roads are likely to have little impact on groundwater resources. Reasonably foreseeable future actions in the project area do not include mining or major agriculture or land development projects. In combination with mitigation measures described in Section 3.4.3, cumulative impacts from the Proposed Action on groundwater resources would likely be low.

Wildlife

Past and present development and other activities have had a cumulative impact on wildlife and their habitat within the project area. The clearing and conversion of land for forest management, agriculture, utility infrastructure (such as the existing facility), and other uses have resulted in the loss of wildlife habitat. The Proposed Action would have moderate impacts to wildlife and wildlife habitat through temporary and permanent access road construction, temporary construction disturbance, and vegetation removal.

New roads and utility corridors often reduce the quality and quantity of interior forest, which has high value for wildlife. The Proposed Action is located entirely within an existing utility corridor, on existing roads, or on new roads that do not require creating interior disturbances. The Proposed Action would slightly reduce the overall available perching, foraging, and nesting habitat available for wildlife species. Therefore, the Proposed Action would contribute a low cumulative impact on wildlife.

Cultural Resources

Cultural resources in the project vicinity have likely been cumulatively affected by past, present, and current development activities. Most impacts have likely occurred as a result of inadvertent disturbance or destruction from ground-disturbing activities such as road work, farming, site development, and forestry operations. Like the Proposed Action, other reasonably foreseeable future projects in the vicinity of the study area have the potential to disturb previously undiscovered cultural resources.

Implementation of the mitigation measures described in Section 3.7.3 would minimize potential proposed project impacts and would reduce the potential for construction activities to contribute incrementally to the adverse cumulative impact on cultural resources in the project area. In the event that previously undiscovered historic properties are encountered, potential impacts could occur, depending on the level and amount of disturbance and the eligibility of the resource for listing on the NRHP. The impacts of the Proposed Action combined with other past, present and reasonably foreseeable future projects on cultural resources would likely be low because the majority of the area affected by the Proposed Action is previously disturbed and would be limited to surface disturbances. Furthermore, BPA would mitigate disturbance to any previously unknown sites as described in Section 3.7.3, and through coordination with the SHPO and tribes.

Visual Quality

The visual quality of the project area has changed due to past and present development, and this trend is expected to continue. The impact to visual quality and views resulting from the Proposed Action would be expected to be a low long-term impact on the rural/pastoral visual environment and the forested visual environment because the rebuilt transmission line would be similar in character to the existing line. Thus, the Proposed Action would have a low cumulative impact on visual quality.

Socioeconomics and Public Services

The Proposed Action would likely not result in any changes in population. Thus, there would be no cumulative impact on population levels, public facilities, or social services. In addition, because the Proposed Action would not be expected to disproportionately affect any low-income or minority populations, there would be no cumulative impact on environmental justice populations. Any employment and income associated with rebuilding the transmission line would be temporary and limited in duration; therefore, the Proposed Action would not contribute to noticeable long-term economic benefits (employment, income, tax revenue) or demand for housing in communities along the right-of-way. If other large construction projects

occurred simultaneously with the Proposed Action, the Proposed Action would likely contribute to a low cumulative impact on employment, income, tax revenue, and housing demand.

Noise, Public Health, and Safety

Noise, public health, and safety in the project area have incrementally changed as a result of past and present developments, and this trend would be expected to continue. The noise effects from reasonably foreseeable actions combined with the Proposed Action would have a low cumulative impact on noise because noise from the Proposed Action would temporary, localized, and substantially decrease after construction.

Past and ongoing activities in the project area include timber harvest, other forestry activities, agriculture, and some residential and industrial development, all of which have the potential for risks to public health and safety from operating heavy machinery and exposure to hazardous materials. Since the effects of the Proposed Action would be mitigated through safety and mitigation measures aimed at reducing the risks from operating heavy equipment and vehicles and exposure to hazardous materials, the cumulative impacts on public health and safety would be expected to be low.

Transportation

Past and present actions resulted in the development of numerous roads near the transmission line right-of-way, including state highways, rural roads, and other paved and graveled roads. The Proposed Action would result in temporary impacts to transportation and traffic, such as traffic delays and temporary lane closures from the construction of 1.0 mile of new access roads. Thus, the Proposed Action would have a low cumulative impact on transportation.

Air Quality

Air quality in the project area has incrementally changed as a result of past and present development, vehicles traveling on local roads, and periodic residential and agricultural burning. This trend would be expected to continue. The Proposed Action would result in temporary impacts to air quality, such as temporary increases in PM, dust, and vehicle emissions, so the contribution of the Proposed Action to cumulative impacts on air quality is expected to be low.

Greenhouse Gases

Given the nature and extent of greenhouse gas emissions and their contribution to climate change, the appropriate area of impact evaluation is global. For consideration of reasonably foreseeable future actions, the life of the project (approximately 50 years) is deemed appropriate. However, it is recognized that greenhouse gases have been accumulating, and would continue to accumulate, in the atmosphere.

Greenhouse gas concentrations in the atmosphere and corresponding climate change occurring over the past 50 years have been primarily caused by anthropogenic contributions. Greenhouse gas emissions have largely originated from the burning of fossil fuels and the clearing of forests around the world from many and varied sources during this time, as well as for a significant period of time before that (U.S. Global Change Research Program 2009). Therefore, unlike the cumulative impacts analyses for other resources that are discussed in this section, the global

nature of greenhouse gases makes cataloguing past, present, and reasonably foreseeable future actions for this resource impossible.

Nonetheless, in a general sense, it can be assumed that any action where fossil fuels have been or are being burned contributes to greenhouse gas concentrations. Examples of such actions include home heating, automobile and other vehicle use, electricity generation, processing and manufacturing of goods and wood-burning activities, among others. In addition, actions that result in the disturbance of soil or loss of vegetation can also increase greenhouse gas concentrations. Vegetation can affect concentrations in two ways. First, if vegetation is removed prior to maturation, the carbon storing potential is lost and carbon dioxide can no longer be sequestered in that vegetation. Second, if that vegetation is burned, it would release all of the carbon it has sequestered back into the atmosphere as carbon dioxide. These actions, as described above, that have occurred in the past are likely still occurring and would continue to occur in the future at some unknown level.

To analyze the cumulative impact of the Proposed Action, national and regional greenhouse gas emissions were considered. In 2013, the total United States greenhouse gas emissions were estimated at 6,742,200,000 metric tons of carbon dioxide equivalent. Overall, total United States emissions rose approximately 7 percent from 1990 to 2013. In 2013, the four states within BPA's service territory emitted roughly 154,630,000 metric tons of carbon dioxide (Table 3-25).

Table 3-25. Estimated Annual Carbon Dioxide Emissions for the BPA Service Territory

State	Carbon Dioxide (CO_2) Emissions Only in Metric Tons (2013)
Idaho	15,890,000
Montana	30,660,000
Oregon	37,030,000
Washington	71,050,000
Total	**154,630,000**

Source: EPA 2015a

As a result of increased greenhouse gas concentrations, the earth's temperature has increased between 1.1°F and 1.6°F over the last century as determined by the IPCC (IPCC 2007). Models predict that the warming of the planet would continue and could be as much as 11.5°F warmer by the end of the 21st century with the current level of emissions. The effect of increased temperatures includes sea level rise due to shrinking glaciers, changes in biodiversity as species attempt to move into more optimal temperature ranges, early initiation of phenological events, lengthening of growing seasons, and thawing of permafrost (U.S. Global Change Research Program 2009).

In the Northwest region of the United States, statistical data indicate that the annual average temperature has risen approximately 1.5°F over the past century, with some areas experiencing increases up to 4°F. Many experts believe that this temperature rise is a major contributing factor to the 25 percent reduction in average snowpack in the Northwest over the past 40 to 70 years. A continued decline in snowpack in the mountains would decrease the amount of water

available during the warm season. A 25- to 30-day shift in the timing of runoff has been observed in some places, and the trend is expected to continue as the region's average temperature is projected to rise another 3°F to 10°F in the 21st century (U.S. Global Change Research Program 2009).

In terms of cumulative impacts to the atmospheric levels of greenhouse gases, any addition, when considered globally, could contribute to long-term impacts to climate change. However, the concentrations estimated for the Proposed Action (approximately 5,562 metric tons of carbon dioxide equivalent), when compared to the regional (less than 0.004 percent) and national rates, are low. In addition, the potential ability of the Proposed Action to assist in the transmission and distribution of renewable (non-fossil fuel burning) energy, such as wind power, would help offset the Proposed Action's contribution to cumulative greenhouse gas impacts. By September 2015, wind, solar, and hydro will account for 57 percent of the generation capacity transmitted by BPA (BPA 2013).

3.15 Intentional Destructive Acts

Intentional destructive acts, such as sabotage, terrorism, vandalism, and theft, sometimes occur at power utility facilities. Vandalism and thefts are most common, and recent increases in the prices of metal and other materials have accelerated thefts and destruction of federal, state, and local utility property. BPA has seen a significant increase in metal theft from its facilities in past years due in large part to the high price of metals on the salvage market.

The impacts from vandalism and theft, though expensive, do not generally cause a disruption of service to the area. Stealing equipment from electrical substations, however, can be extremely dangerous. In fact, nationwide, many would-be thieves have been electrocuted while attempting to steal equipment from energized facilities. On October 11, 2006, a man in La Center, Washington, was electrocuted while apparently attempting to steal copper from an electrical substation.

Federal and other utilities use physical deterrents, such as fencing, cameras, and warning signs, to help prevent theft, vandalism, and unauthorized access to facilities. In addition, through its Crime Witness Program, BPA offers up to $25,000 for information that leads to the arrest and conviction of individuals committing crimes against BPA facilities. Anyone having such information can call BPA's Crime Witness Hotline at (800) 437-2744. The line is confidential, and rewards are issued in such a way that the caller's identity remains confidential.

Acts of sabotage or terrorism on electrical facilities in the Pacific Northwest are rare, although some have occurred. These acts generally focused on attempts to destroy large transmission line steel towers. For example, in 1999 a large transmission line steel tower in Bend, Oregon, was toppled.

Depending on the size and voltage of the line, destroying towers or other equipment could cause electrical service to be disrupted to utility customers and end users. The effects of these acts would be as varied as those from the occasional sudden storm, accident, or ***blackout*** and would depend on the particular configuration of the transmission system in the area. While in some

situations these acts would have no noticeable effect on electrical service, in other situations, service could be disrupted in the local area, or if the damaged equipment was part

When a loss of electricity occurs, all services provided by electrical energy cease. Illumination is lost. Lighting used by residential, commercial, industrial, and municipal customers for safe movement and security is affected. Residential consumers lose heat. Electricity for cooking and refrigeration is also lost, so residential, commercial, and industrial customers cannot prepare or preserve food and perishables. Residential, commercial, and industrial customers experience comfort/safety and temperature impacts, increases in smoke and pollen, and changes in humidity due to loss of ventilation. Mechanical drives stop, causing impacts as elevators, food preparation machines, and appliances for cleaning, hygiene, and grooming are unavailable to residential customers. Commercial and industrial customers also lose service for elevators, food preparation, cleaning, office equipment, heavy equipment, and fuel pumps.

In addition, roadways experience gridlock where traffic signals fail to operate. Mass transit that depends on electricity, such as light rail systems, can be impacted. Sewage transportation and treatment can also be disrupted. Electricity loss also affects alarm systems, communication systems, cash registers, and equipment for fire and police departments. Loss of power to hospitals and people on life-support systems can be life threatening.

Overhead transmission conductors and the structures that carry them are mostly on unfenced utility rights-of-way. The conductors use the air as insulation. The structures and tension between conductors make sure they are high enough above ground to meet safety standards. Structures are constructed on footings in the ground and are difficult to dislodge.

While the likelihood for sabotage or terrorist acts on the Proposed Action is difficult to predict, it is unlikely that such acts would occur. If such an act did occur, it could have a significant impact on the transmission system or electrical service because the transmission line would be an integral part of BPA's transmission system. However, any impacts from sabotage or terrorist acts likely could be quickly isolated. The DOE, public and private utilities, and energy resource developers include the security measures discussed above, as well as other measures, to help prevent such acts and to respond quickly if human-caused damage or natural disasters occur.

Chapter 4. Environmental Consultation, Review, and Permit Requirements

4.1 National Environmental Policy Act

This EA was prepared by BPA under to regulations implementing NEPA (42 USC § 4321 *et seq*.), which requires federal agencies to assess, consider and disclose the impacts that their actions may have on the environment before decisions are made or actions are taken. BPA would consider the project's potential environmental consequences and comments from agencies, tribes and the public when making decisions regarding the Proposed Action.

4.2 Vegetation, Wildlife, and Fish

4.2.1 Endangered Species Act

The ESA of 1973 (16 USC § 1531 *et seq*.) established a national program for the conservation of threatened and endangered species of fish, wildlife, and plants, and the preservation of the ecosystems on which they depend.

The ESA is administered by the USFWS for wildlife and freshwater species, and by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) for marine and anadromous species. The ESA defines procedures for listing species, designating critical habitat for listed species, and preparing recovery plans. It also specifies prohibited actions and exceptions.

Section 7(a)(2) of the ESA requires federal agencies to ensure that the actions they authorize, fund, and carryout do not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitat. Section7(c)(1) of the ESA and other federal regulations require that federal agencies prepare BAs addressing the potential effects of major construction actions on listed or endangered or threatened species.

BPA prepared and submitted a biological assessment to USFWS to address potential impacts to the ESA listed wildlife and plant species summarized in Appendix B, Table 2. USFWS has issued a biological opinion and incidental take permit for streaked horned lark, and has concurred with BPA's determination of "not likely to adversely affect" for the other species included in the consultation. BPA would also utilize the Programmatic Biological Opinion that is currently under development with NMFS to address potential impacts to ESA listed anadromous fish under their jurisdiction.

4.2.2 Fish and Wildlife Conservation Ace and Fish and Wildlife Coordination Act

The Fish and Wildlife Conservation Act of 1980 (16 USC § 2901 *et seq.*) encourages federal agencies to conserve and promote conservation of non-game fish and wildlife species and their

habitats. In addition, the Fish and Wildlife Coordination Act (16 USC § 661 *et seq.*) requires federal agencies undertaking projects affecting water resources to consult with the USFWS and the state agency responsible for fish and wildlife resources.

BPA has consulted with the USFWS and ODFW and incorporated recommendations to avoid and minimize potential impacts to fish and wildlife resources. BPA's project team conducted meetings and site visits with ODFW and NMFS fisheries biologists to the project area to review habitat conditions, potential impacts to fisheries resources, and proposed improvements to fish passage and habitat conditions.

Impacts on fish from the Proposed Action would be low to moderate, as described in Section 3.4 and wildlife as described in Section 3.6. Mitigation designed to avoid and minimize impacts to fish and wildlife and their habitat is identified in Sections 3.4 and 3.6 of this EA.

4.2.3 Magnuson-Stevens Fishery Conservation and Management Act

NOAA Fisheries Service is responsible for ensuring compliance with the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Magnuson-Stevens Act [16 USC § 1801 *et seq.*]). In the exclusive economic zone, except as provided in Section 102, the United States claims, and would exercise, sovereign rights and exclusive fishery management authority over all fish and all continental shelf fishery resources. Beyond the exclusive economic zone, the United States claims, and would exercise, exclusive fishery management authority over all anadromous species throughout the migratory range of each such species, except when in a foreign nation's waters, and over all continental shelf fishery resources.

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Act to establish requirements for ***essential fish habitat (EFH)*** descriptions in federal fishery management plans, and to require federal agencies to consult with NOAA Fisheries Services on activities that may adversely affect EFH (Pub. L. No. 104-297). EFH can include all streams, lakes, ponds, wetlands, and other viable waterbodies, and most of the habitat historically accessible to salmon necessary to fish for spawning, breeding, feeding, or growth to maturity. Activities above impassible barriers are subject to consultation provisions of the Magnuson-Stevens Act.

Compliance with the Magnuson-Stevens Act for Oregon Coast coho salmon (*Oncorhynchus kisutch*) would be satisfied by utilizing BPA's Programmatic Biological Opinion (and the associated impact analysis of the EFH) for this project during Section 7 Consultation with NOAA/NMFS.

4.2.4 Migratory Bird Treaty Act and Federal Memorandum of Understanding

The Migratory Bird Treaty Act (MBTA) implements multiple treaties and conventions between the United States and other countries, including Canada, Japan, Mexico, and the former Soviet Union, for the protection of migratory birds (16 USC § 703-712). Most bird species, except for upland and non-native species, are classified as migratory and are protected under the MBTA. The MBTA makes taking, killing, or possessing migratory birds or their eggs or nests unlawful.

BPA (through DOE) and USFWS have a memorandum of understanding (MOU) to address migratory bird conservation in accordance with Executive Order 13186 *Responsibilities to Federal Agencies to Protect Migratory Birds*, which directs each federal agency to work with the USFWS to develop conservation agreements when taking actions that may negatively affect migratory bird populations. The MOU addresses how the agencies can cooperate to address migratory bird conservation and includes specific measures for consideration during project planning and implementation.

Thirteen species of birds protected under the MBTA are likely to occur within the project area (Appendix B). BPA would meet its responsibilities under the MBTA by conducting most tree removal after August 15 to minimize displacement of nesting birds.

4.2.5 Bald Eagle and Golden Eagle Protection Act

The Bald Eagle and Golden Eagle Protection Act of 1940 (16 USC § 668-668d) prohibits the taking or possessing of and commerce in bald and golden eagles, with limited exceptions, where such acts are considered intentional of in "wanton disregard" of the safety of bald or golden eagles. No known bald eagle nesting habitat is located within 2 miles of the project area. If any bald eagle nests are found during project activities, BPA would comply with the Bald Eagle and Golden Eagle Protection Act to address potential impacts to bald eagles.

4.2.6 Oregon Fish Passage Law

Since August 2001, the owner or operator of an artificial obstruction located in waters in which native migratory fish are currently or were historically present must address fish passage requirements prior to certain trigger events. Laws regarding fish passage may be found in Oregon Revised Statutes 509.580 through 509.910 and in Oregon Administrative Rules 635, Division 412. Fish passage plans are being prepared for culvert and bridge replacements on fish-bearing and historically fish-bearing streams.

BPA is in the process of completing a Fish Passage Plan for Road-stream Crossings, as part of the State's Removal/Fill Program (discussed in Section 3.4), and would submit plan sheets to ODFW. BPA intends to meet the requirements of these regulations as part of this project although it would not obtain the written approval that the Proposed Action complies with fish passage laws. As a federal agency, BPA is not required to comply with state and local stream habitat approvals or permits; however, BPA strives to meet or exceed these substantive standards and policies of state and local plans and programs to the maximum extent practicable.

4.2.7 Oregon Fish and Wildlife Habitat Mitigation Policy

ODFW's fish and wildlife habitat mitigation policy (OAR 635-415-0000) requires or recommends mitigation for losses of fish and wildlife habitat resulting from development actions. Specific mitigation depends upon the habitat protection and mitigation opportunities provided by specific statutes. Rules for the fish and wildlife habitat mitigation policy are in Oregon Administrative Rules 635, Division 415. The purpose of these rules is to further the Wildlife Policy (ORS 496.012) and the Food Fish Management Policy (ORS 506.109) of the State of Oregon through the application of consistent goals and standards to mitigate impacts to fish and wildlife habitat caused by land and water development actions.

BPA has consulted with the ODFW and incorporated its biologist's recommendations to avoid and minimize potential impacts to fish and wildlife resources, as well as provide offsetting mitigation. Twelve culverts would be reconstructed to be fish passable as part of the Proposed Action. Additionally, five existing ford crossings would be replaced with fish passable culverts, one existing ford would be replaced with a bridge, and one bridge would be replaced. Three temporary construction bridges and one new culvert would also be installed to minimize access road impacts to streams. Site restoration measures would also be implemented after project construction according to prescriptions for re-seeding and mulching disturbed areas, replanting trees and shrubs removed adjacent to culvert installations.

As a federal agency, BPA is not required to comply with state and local approvals or permits; however, BPA strives to meet or exceed these substantive standards and policies of state and local plans and programs to the maximum extent practicable. Based on initial ODFW biologist input, the mitigation proposed by BPA and described in Sections 3.4.3 and 3.6.3 would be consistent with ODFW's fish and wildlife habitat mitigation policy.

4.3 Water Resources

The Clean Water Act (33 USC § 1251 et seq.) regulates discharges into waters of the United States. Section 401 of the Clean Water Act requires that states certify compliance of federal permits and licenses with state water quality standards. A federal permit to conduct an activity that results in discharges into waters of the United States, including wetlands, is issued only after the affected state certifies that existing water quality standards would not be violated if the permit were issued.

Section 402 of the Clean Water Act authorizes discharges of pollutants, such as stormwater from point sources into waters of the United States through the National Pollutant Discharge Elimination System (NPDES) permitting program. The U.S. EPA and delegated states administer the NPDES permitting program. As part of this program, General NPDES permits would be issued to BPA to regulate stormwater discharges associated with construction activities. Under the Stormwater Phase II Final Rule, all construction activities that disturb one or more acres of land are being regulated. "Disturbance" refers to exposed soil resulting from activities such as clearing, grading, and excavating. Construction activities can include road building and demolition.

For federal facilities in the State of Oregon, EPA has delegated enforcement and permitting authority to the DEQ. DEQ regulates stormwater runoff from construction sites through a series of general and individual permits. BPA, being a federal agency, obtained and maintains an agency NPDES General Storm Water 1200-CA Permit from DEQ (File No.: 111769; EPA No.: ORR10-4145). The General NPDES Permit requires permitees to notify the issuing agency of proposed construction activities, prepare and implement Stormwater Pollution Prevention Plans to control stormwater pollution associated with construction activities, and to notify the issuing agency once construction ceases and the site has been stabilized.

BPA would prepare a Stormwater Pollution Prevention Plan to meet the requirements of the EPA Construction General Permit (CGP February 16, 2012) at the direction of DEQ, which is in

the process of revising the 1200-CA permits. The EPA Construction General Permit also requires that BPA construction projects comply with water quality standards set by the state in Oregon Administrative Rule 340 Division-41. The purpose of this plan is to ensure that nonpoint source pollution does not contaminate waters of the United States, both during and after construction.

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. This includes excavation activities that result in the discharge of dredged material that could destroy or degrade waters of the United States. Dredge and fill activities are controlled by a Section 404 permit process that is administered by the USACE in conjunction with state agencies that have been delegated this authority. In Oregon, DSL is the state agency with permitting authority over discharges of dredged or fill materials into waters of the state. Through its Removal-Fill Law, DSL requires a permit for removal, fill, or alteration involving 50 cubic yards or more of material in any water of the state, including wetlands.

DSL looks at impacts for the entire project in determining mitigation requirements. In DSL's Removal-Fill Guide (DSL 2013), DSL acknowledges that creating numerous small mitigation sites along a linear corridor is impracticable and not necessarily ecologically desirable. Therefore, the State developed Oregon Administrative Rule 141-085-690 (12) to address the challenges of providing mitigation for linear projects that cross multiple watersheds. This administrative rule allows projects to be reviewed/approved on a case-by-case basis, and establishes mitigation requirements.

BPA is in the process of preparing a joint removal-fill permit for this project, which would be reviewed by the USACE and DSL. BPA would not begin construction until after the application is approved by the USACE and DSL.

4.4 Wetlands and Floodplains Protection

DOE mandates that impacts to floodplains and wetlands be assessed and alternatives for protection of these resources be evaluated in accordance with Compliance with Floodplain/Wetlands Environmental Review Requirements (10 CFR 1022.12) and Federal Executive Orders 11988, *Floodplain Management*, and 11990, *Protection of Wetlands*. An evaluation of project impacts on floodplains and wetlands is included in Section 3.5 of this EA. This EA serves as the notice of floodplain and wetlands actions as required under 10 CFR 1022.12(b).

4.5 Cultural and Historic Resources

Cultural resources are protected by a number of federal laws. A cultural resource is an object, structure, building, archaeological site, or district that provides irreplaceable evidence of natural or human history. Cultural and historic resources include national landmarks, archaeological sites, and properties listed (or eligible for listing) on the NRHP. In addition, American Indian Tribes are afforded special rights under certain laws, as well as the opportunity to voice concerns

about issues under these laws. Laws and other directives for the protection of cultural resources and the rights of American Indian Tribes include the following:

- Antiquities Act of 1906 (16 U.S.C. 431-433)
- Historic Sites Act of 1935 (16 U.S.C. 461-467)
- NHPA of 1966 (16 U.S.C. 470 *et seq*.), as amended, inclusive of Section 106
- Archaeological Data Preservation Act of 1974 (16 U.S.C. 469 a-c)
- Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C. 470 aa-mm), as amended
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq*.)
- Executive Order 13007 (Indian Sacred Sites)
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996, 1996a)

Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties. Historic properties are properties that are included in or that meet the criteria for listing on the NRHP. If a federal agency plans to undertake a type of activity that could affect historic properties, it must consult with the appropriate State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer and others to make an assessment of adverse effects on identified historic properties. In compliance with Section 106, BPA consulted with the State Historic Preservation Office (SHPO), the Spokane Tribe of Indians, and the Confederated Tribes of the Colville Indian Reservation.

If, during construction, previously unidentified cultural resources that would be adversely affected by the Proposed Action are found, BPA would follow the mitigation measures identified in Section 3.7.3.

4.6 Farmland Protection Policy Act

The Farmland Protection Policy Act (7 USC § 4201 *et seq*.) directs federal agencies to identify and quantify adverse impacts of federal programs on farmlands. The Act's purpose is to minimize the number of federal programs that contribute to the unnecessary and irreversible conversion of agricultural land to non-agricultural uses. Farmland subject to the Act does not have to be currently used for crop land and may be forest land, pastureland, cropland, or other land, but not water or urban built-up land (NRCS 2014).

A large portion of the transmission line is located in or adjacent to agricultural land. The Proposed Action would occur almost entirely along the existing transmission line right-of-way (with the exception of new access roads) and within existing structure areas or access road rights-of-way. Evaluation of the project according to the criteria set forth in the Act indicates the Proposed Action would comply with the Act and would have little long-term impact on area farmlands. As described in Section 3.1, approximately 134.6 acres of agricultural land would be disturbed as a result of access road work. Of the disturbed farmland acreage, 8.2 acres are

designated as Prime Farmlands (including land that would be prime farmland if drained and/or protected from flooding) and 25.6 acres are designated as Farmlands of Statewide Importance. Replacing the transmission line structures could result in the temporary disturbance of approximately 215.2 acres of agricultural land (27.0 acres are Prime Farmlands [including land that would be prime farmland if drained and/or protected from flooding] and 46.5 acres are Farmlands of Statewide Importance). In the context of the total existing agricultural land in the county (219,625 acres), these impacts are low comparatively. In addition, approximately 0.22 acre of land (primarily forested) would be permanently converted from existing land uses to 0.6 mile of new access trails.

4.7 Coastal Zone Management Act

As an agency of the federal government, BPA would follow the guidelines of the CZMA (16 USC § 1451-1464) to ensure that the construction and operation and maintenance activities associated with the Proposed Action are, to the maximum extent practicable, consistent with the enforceable policies of the state management programs. Because the Proposed Action is within Oregon's coastal zone, which includes Lane County, BPA is subject to the coordination and consistency requirements of the CZMA.

Oregon has an approved Coastal Zone Management Program, Oregon Coastal Management Program, which is implemented by the Oregon Department of Land Conservation and Development. The CZMA requires that "each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs" (16 USC 1456c(1)(A)). Oregon Coastal Management Program policies include the statewide planning goals, county and city comprehensive plans, and state natural resource laws.

BPA is designing and planning to implement the Proposed Action so that it would be consistent to the maximum extent practicable with the Oregon Coastal Management Program. BPA has notified Lane County and the Oregon Department of Land Conservation and Development about the Proposed Action. BPA has received signatures from Lane County planning staff acknowledging consistency of the Proposed Action with local planning regulations. BPA has submitted a consistency statement to Oregon Department of Land Conservation and Development for review with the wetland joint permit application.

4.8 State and Local Plan and Program Consistency

As a federal agency, BPA is not required to comply with state and local land-use approvals or permits; however, BPA strives to meet or exceed these substantive standards and policies to the maximum extent practical.

Table 4-1 identifies state and local land use plans that guide development within the project area. BPA would coordinate with state and local agencies to obtain the necessary access and alert them of potential impacts from the Proposed Action, such as to utilities or floodplains. BPA

would also coordinate with ODOT for modification to or any new access roads requiring access off an ODOT-managed state roadway.

Table 4-1. State and Local Land Use Plans in the Project Area

State		
Oregon Department of Land Conservation and Development	Oregon Statewide Planning Goals	These goals constitute the framework of Oregon's statewide program of land use planning. Construction of the transmission line outside of urban growth areas may need to be evaluated for compliance with these goals, specifically for Goal 15, Willamette River Greenway.
Oregon Parks and Recreation Department	2005-2014 Oregon Statewide Trails Plan	Oregon's official plan for recreational trail management for the next 10 years, serving as a statewide and regional information and planning tool to assist Oregon recreation providers (local, state, federal, and private) in providing trail opportunities and promoting access to Oregon´s trails and waterways.
	2008-2012 Oregon Statewide Comprehensive Outdoor Recreation Plan	Oregon's basic five-year plan for outdoor recreation. It provides information and recommendations to guide federal, state, and local units of government, as well as the private sector, in making policy and planning decisions.
Oregon	Oregon Revised Statutes (ORS)	The ORS establishes priorities for including land inside urban growth boundaries; goal exceptions would need to demonstrate consistency with ORS 197.298.
County		
Lane County	Lane County Code	Chapter 10, Zoning, regulates land uses and development standards for County zoning districts.
	Lane County Comprehensive Plan	Lane County's long-range policy document that guides growth and development outside of cities' urban growth boundaries.
Regional		
Lane Council of Governments	Rivers to Ridges Vision and Strategies	Broad regional perspective guide to the development of a parks and open space vision for the Eugene-Springfield Metropolitan Area.

4.9 Environmental Justice

In February 1994, Executive Order 12898 was released to federal agencies. This order states that federal agencies shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

The Proposed Action has been evaluated for potential disproportionately high environmental effects on minority and low-income populations and none were identified, as discussed in Section 3.9.

4.10 Public Health and Safety

Several federal laws related to hazardous materials and toxic substances potentially apply to the Proposed Action. Various provisions of the Spill Prevention Control and Countermeasures Rule (40 CFR 112), the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC § 9601 *et seq.*), and the Resource Conservation and Recovery Act (RCRA [42 USC § 6901 *et*

seq.]) may apply to the Proposed Action, depending upon the exact quantities and types of hazardous materials stored on-site. RCRA, in particular, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste. Small amounts of hazardous waste may be generated by the Proposed Action. Typical construction wastes may include motor and lubricating oils and cleaners. If wood poles are temporarily stored on site, approval of landing areas must be obtained, and compliance with federal, state, and local requirements for environmental protection, cleanup, and restoration of landing areas is required. These materials would be disposed of according to state law and RCRA. Solid wastes would be disposed of at an approved landfill or recycled.

The Federal Insecticide, Fungicide and Rodenticide Act (7 USC § 136 (a-y)) registers and regulates pesticides. BPA uses herbicides, a kind of pesticide, only in a limited fashion and under controlled circumstances. Herbicides are used on transmission line rights-of-way to control vegetation, including noxious weeds. When BPA uses herbicides, the date, dose, and chemical used are recorded and reported to state government officials. Herbicide containers are disposed of according to RCRA standards and consistent with BPA's *Transmission System Vegetation Management EIS/Record of Decision* (BPA 2000); also BPA only uses EPA-approved herbicides.

If a hazardous material, toxic substance or petroleum product is discovered that may pose an immediate threat to human health or the environment, BPA requires the contractor to notify BPA's Contracting Officer's Technical Representative (COTR) immediately. Other conditions, such as large dump sites, drums of unknown substances, suspicious odors, stained soil, etc., must also be reported immediately to the COTR. The COTR would coordinate with the appropriate personnel within BPA. In addition, the contractor would not be allowed to disturb such conditions until the COTR has given the notice to proceed.

The Safe Drinking Water Act (41 USC § 300f *et seq*.) is designed to protect the quality of public drinking water and its sources. BPA would comply with state and local public drinking water regulations. The Proposed Action would not affect any public sole source aquifers or other critical aquifers, or adversely affect any public surface water supplies.

4.11 Noise

The Noise Control Act of 1972 (42 USC § 4901 *et seq*.), as amended, sets forth a broad goal of protecting all people from noise that jeopardizes their health or welfare. The Act further states that federal agencies are authorized and directed, to the fullest extent consistent with their authority under federal laws administered by them, to carry out the programs within their control in such a manner as to further this policy. As described in Section 3.10, the Proposed Action would have primarily temporary and low noise impacts, and mitigation measures are identified in Section 3.10.3 to further reduce noise impacts.

4.12 Air Quality

The Clean Air Act, as revised in 1990 (42 USC § 4701), requires EPA and delegated states to carry out a wide range of regulatory programs intended to ensure attainment of the NAAQS. Air quality impacts of the Proposed Action would be low, localized, and temporary, as discussed in Section 3.12. Mitigation measures are identified in Section 3.12.3 to further reduce air quality impacts during construction.

4.13 Greenhouse Gases

Various federal and state mandates address the need to reduce greenhouse gas emissions:

- The Clean Air Act (as described in Section 3.13 and Section 4.12) is a federal law that establishes regulations to control emissions from large generation sources such as power plants; limited regulation of greenhouse gas emissions occurs through New Source Review permitting program.
- EPA has issued the Final Mandatory Reporting of Greenhouse Gases Rule (40 CFR 98) that requires reporting of greenhouse gas emissions from large sources. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of greenhouse gases are required to submit annual reports to EPA (EPA, 2015a).
- Executive Orders 13423 and 13514 require federal agencies to measure, manage, and reduce greenhouse gas emissions by agency-defined target amounts and dates.

Greenhouse gas emissions were calculated for activities that would produce greenhouse gas emissions as part of the Proposed Action: construction of the transmission line and ongoing annual operations and maintenance for the estimated 50-year operational life of the transmission line. Greenhouse gas emissions would be below EPA's mandatory reporting threshold. The impact of the Proposed Action on greenhouse gases is discussed in Section 3.13.

4.14 Federal Communications Commission

Federal Communications Commission (FCC) regulations require that transmission lines be operated so that radio and television reception are not seriously degraded or repeatedly interrupted. Further, the Commission regulations require that the operators of these devices mitigate such interference. There would likely be no interference with radio, television, or other reception as a result of the Proposed Action (see Section 3.10). BPA would comply with FCC requirements relating to radio and television interference from the Proposed Action if any such interference occurs.

4.15 Federal Aviation Administration

As part of transmission line design, BPA seeks to comply with Federal Aviation Administration (FAA) procedures. The Administration requires BPA to submit its designs for approval if a

proposed structure is taller than 200 feet from the ground, if a conductor is 200 feet above the ground or if any part of the proposed transmission line or its structure is within the approach path of an airport.

Chapter 5. Persons, Tribes, and Agencies Receiving the EA

The project mailing list contains over 150 stakeholders, including potentially interested or affected landowners; tribes; local, state, and federal agencies; public officials; interest groups; businesses; and libraries. They have directly received or have been given instructions on how to receive all project information made available so far, and they would have an opportunity to review the Draft and Final EAs. Specific entities (other than private persons) receiving this EA are listed below by category.

5.1 Federal Agencies and Officials

Bureau of Land Management, Coos Bay District
Bureau of Land Management, Eugene District
Bureau of Land Management, State Office
National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS)
U.S. Army Corps of Engineers
U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service Siuslaw National Forest
U.S. Representative Peter DeFazio
U.S. Senator Jeff Merkley
U.S. Senator Ron Wyden

5.2 Tribes and Tribal Groups

Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians
Confederated Tribes of the Grand Ronde Community
Confederated Tribes of Siletz
Coquille Indian Tribe
Cow Creek Band of Umpqua Tribe of Indians
Cowlitz Indian Tribe

5.3 State Agencies and Officials

Oregon Board of Forestry
Oregon Department of Agriculture
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Oregon Department of State Lands
Oregon Department of Transportation
Oregon Parks and Recreation Department
Oregon State Governor's Office
Oregon State Representative David Gomberg
Oregon State Representative Paul Holvey
Oregon State Senator Floyd Prozanski
Oregon State Senator Arnie Roblan
Oregon Watershed Enhancement Board
Oregon Water Resources Department

5.4 Local Governments and Utilities

Cities

City of Eugene

Utilities

Blachly-Lane Electric Cooperative, Inc.
Central Lincoln PUD
Lane Electric Cooperative, Inc.
Springfield Utility Board

Counties

Lane County Commissioner, Jay Bozievich

5.5 Libraries

Eugene Public Library
Springfield Public Library
Fern Ridge Public Library
Mapleton Public Library
Florence Public Library

Chapter 6. Glossary

303(d), water quality limited waters	Under Section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop a list of water quality limited segments. Waters on the 303(d) list do not meet water quality standards, even after the minimum required levels of pollution control technology have been installed at the point sources of pollution.
A-weighted decibel (dBA)	A logarithmic measurement of sound based on the decibel but weighted to approximate the human perception of sound. Commonly used for measuring environmental and industrial noise levels.
Alluvial	Deposited by a stream or running water.
Anadromous	Fish species that breed in fresh water but live their adult life in the sea.
Anthropogenic	Of, relating to, or resulting from the influence of human beings on nature.
Background	More than 5 miles from the viewer.
Best Management Practice(s) (BMP[s])	Typically state-of-the-art technology designed to prevent or reduce impacts. They represent physical, institutional, or strategic approaches to environmental problems.
Biomass	Biological material from a living or recently living organism.
Bird diverter	Device placed on the transmission line to help birds see power lines and avoid potentially fatal collisions.
Blackout	The disconnection of the source of electricity from all the electrical loads in a certain geographical area. Brought about by an emergency forced outage or other fault in the generation, transmission, or distribution system serving the area.
Candidate species	Plants and animals native to the U.S. for which the USFWS or the NMFS has derived from sufficient information on biological vulnerability and threats to justify proposing to add them to the threatened and endangered species list, but the species has not yet been listed.
Carbon dioxide equivalent	A measurement used to compare the global warming potential of a typical greenhouse gas, based on concentrations of carbon dioxide; global warming potential is defined as the relative measure of how much heat a greenhouse gas traps in the atmosphere by comparing the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide.
Carbon sequestration	The process through which agricultural and forestry practices remove carbon dioxide from the atmosphere and store it as sugars in trees, plants, and other vegetation.
Chaparral	An ecological community composed of shrubby plants adapted to dry summers and moist winters.
Compaction	The squeezing or compression of a soil mass.

Comprehensive plan	An official document adopted by a local government setting forth its general policies regarding the long-term physical development of a city or other area.
Conductor	The wire cable strung between transmission structures through which electric current flows.
Corona	An electrical field around the surface of a conductor, insulator, or hardware caused by ionization of the surrounding air.
Counterpoise	A type of electrical ground that is not connected to earth. It is used when a normal earth ground cannot be used because of high soil resistance. It consists of a network of wires or cables (or a metal screen) parallel to the ground, suspended from a few centimeters to several meters above the ground. The counterpoise functions as one plate of a large capacitor, with the conductive layers of the earth acting as the other.
Critical habitat	Habitat essential to the conservation of an endangered or threatened species listed under the ESA that has been designated by the USFWS or the NMFS.
Cross arm	A high quality piece of wood mounted on a utility pole used to hold up power lines or other equipment.
Dampers	Devices attached to insulators in order to minimize vibration of the conductors in windy conditions.
Danger tree	Trees (or high-growing brush) in or alongside the transmission line right-of-way that are hazardous to the transmission line. These trees are identified by special crews and must be removed to prevent tree-fall into the line or other interference with the conductors. BPA's Construction Clearing Policy requires that trees be removed that meet either one of two technical categories: Category A is any tree that within 15 years will grow to within about 18 feet of conductors when the conductor is at maximum sag (212ºF) and swung by 6 pounds per square feet of wind (58 miles per hour); Category B is any tree or high-growing brush that after a year of growth will fall within about 8 feet of the conductor at maximum sag (176ºF) and in a static position.
Disconnect switches	Structures used to disconnect sections of a transmission line to prevent electricity from flowing through the conductors within that section.
Easement	The property interest obtained by BPA to use land owned by another, for example, to construct, maintain, and operate a transmission line.
Ecoregion	An area defined by its geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology.
Ephemeral stream	A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.
Endangered species	Plants or animals that are in danger of extinction through all or a significant portion of their ranges and that have been listed as endangered by the USFWS or the NMFS.

Endemic	Native to a particular region or area.
Environmental Assessment (EA)	A document that evaluates the possible environmental effects of a Federal agency's proposed action and provides sufficient evidence to determine whether an EIS or a FONSI is warranted. An EA is one means of compliance with NEPA.
Environmental Justice Populations	Environmental Justice Populations are low-income and minority populations protected under Executive Order 12898 from disproportionate adverse effects of federal projects.
Erosion	The wearing away of soil or rock due to weather or the action of wind and water.
Essential Fish Habitat (EFH)	EFH is defined in the Magnuson-Stevens Act as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The rules promulgated by the NMFS in 1997 and 2002 further clarify EFH with the following definitions: waters—aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate—sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary—the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity—stages representing a species' full life cycle.
Evolutionary Significant Unit (ESU)	A Pacific salmon population or group of populations that is substantially reproductively isolated from other salmon populations and that represents an important component of the evolutionary legacy of the species.
Farmlands of Statewide Importance	Farmland of statewide importance, or of local importance, is land other than prime farmland or unique farmland but that is also highly productive.
Feller buncher	A tracked piece of equipment that mechanically cuts, removes, and stacks trees.
Fiber optic cable	A cable made of optical fibers that can transmit large amounts of information at the speed of light.
Finding of No Significant Impact (FONSI)	A document issued by a federal agency briefly presenting the reasons why an action for which the agency has prepared an EA has no potential to have a significant impact on the human environment and, thus, would not require preparation of an EIS.
Fluvial	Of, relating to, or inhabiting a river or stream.
Forb	Non-grass-like herbaceous plant.
Foreground	Within 0.25 mile to 0.5 mile of the viewer.
Gauss	A unit of measurement of a magnetic field B, which is also known as the "magnetic flux density" or the "magnetic induction".

Grass	Any of various plants having slender leaves characteristic of the grass family including grasses, sedges, and rushes.
Greenhouse gas	Greenhouse gases are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat.
Ground wire	A protective wire strung above the conductors on a transmission line to shield the conductors from lightning; also called shield wire or overhead ground wire.
Guy wire	Steel wire used to support or strengthen a structure.
Habitat	Habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives, or the physical environment that surrounds a species population.
Hispanic/Latino	A self-designated classification for people whose origins are from Spain, the Spanish-speaking countries of Central or South America, the Caribbean, or those identifying themselves generally as Spanish, Spanish-American, etc. Origin is viewed as ancestry, nationality, or country of birth of the person or person's parents or ancestors. Hispanic/Latino persons may be of any race, White and non-White
Insulators	A bell-shaped device, made of ceramic or other non-conducting material, used to prevent electricity from arcing from the conductors to the structures and traveling to the ground.
Invasive plants	Any plant that is both non-native to the ecosystem under consideration and whose introduction causes or is likely to cause harm to human health or cause economic or environmental harm. Invasive plants do not have to be officially listed by a federal, state, or county government to be considered invasive.
Intermittent stream	A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.
Junction box	A container for electrical connections, usually intended to conceal them from sight and deter tampering.
Jurisdictional wetlands and waters	Jurisdictional wetlands and waters are those wetlands and water bodies that are protected either under the federal Clean Water Act Section 404 or under state or local regulations.
Kilovolt (kV)	One thousand volts.
Line mile	The number of miles of transmission line.
Maintenance Area	A former nonattainment area that meets EPA's promulgated standards for the same air quality criteria pollutant.
Median household income	Household income that is in the middle of the range of total household incomes. It is not the average.
Metric ton	A unit of mass equivalent to 1,000 kilograms or about 2,200 pounds.
Middle ground	Within 0.5 mile to 5 miles from the viewer.

Mitigation	Steps or measures taken to lessen the potential impacts predicted for a resource. They may include reducing the impact, avoiding it completely, or compensating for the impact. Some mitigation, such as adjusting the location of a structure to avoid a special resource, is taken during the design and location process. Other mitigation may be done during construction, such as measures to reduce noise, or after construction, such as reseeding access roads with desirable grasses to help prevent the proliferation of weeds.
Mitigation bank	A mitigation bank is an area formally established for the restoration, creation, enhancement, or preservation of a wetland, stream, or habitat conservation area, and which is designed to offset expected adverse impacts to similar nearby ecosystems. The goal is to replace the exact function and value of the specific wetland habitats that would be adversely affected by a proposed project. ***Mitigation Credits*** (see below) can be purchased at the bank to offset impacts.
Mitigation credit	Mitigation Credits are the units of exchange and are defined as the ecological value associated with one acre of a wetland or ecosystem and the linear distance of a stream functioning at the highest possible capacity within the service area of the bank. Credits are evaluated by a Mitigation Bank Review Team.
Mustelid	A member of Mustelidae, a family of carnivorous mammals, such as weasels.
National Ambient Air Quality Standards (NAAQS)	Under the Clean Air Act, EPA specifies maximum allowable concentrations for each of the six criteria pollutants (carbon monoxide, particulate matter, ozone, sulfur dioxide, lead, and nitrogen dioxide). For each of the six criteria pollutants, the NAAQS represent a maximum concentration above which adverse effects on human health may occur.
Noise-sensitive land use	Common noise-sensitive land uses include residences, parks, schools, and churches.
Nonattainment Area	An area that fails to meet the standards established by EPA for an air quality criteria pollutant.
Noxious weeds	Any plant designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property.
Oregon State Sensitive Species	This term refers to naturally-reproducing fish and wildlife species, subspecies, or populations which are facing one or more threats to their populations and habitats.
Outage	Events caused by a disturbance on the electrical system that requires BPA to remove a piece of equipment or a portion or all of a transmission line from service. The disturbances can be either natural or human-caused.

Palustrine	Palustrine systems include any inland wetland which lacks flowing water, contains ocean-derived salts in concentrations of less than 0.05 percent, and is non-tidal. Palustrine wetlands are further divided into palustrine emergent (dominated by herbaceous plants), palustrine scrub-shrub (dominated by shrubs and saplings), palustrine forested (dominated by trees) or palustrine open water (little if any vegetation).
Particulate matter (PM)	A criteria air pollutant regulated under the Clean Air Act. Particulate matter includes dust, soot, and other tiny bits of solid materials that are released into and move around in the air.
Passerine	A bird of the order Passeriformes, known as perching birds or songbirds.
Per capita income	Average income per person obtained by dividing aggregate income (sum of the income of all households in a given geographic area) by the total population of an area.
Perennial stream	A stream that flows continuously except possibly in years of severe drought.
Physiographic province	A geographic region in which climate and geology have given rise to an array of landforms different from those of surrounding regions. The region has a characteristic geomorphology, and often specific subsurface rock type or structural elements.
PM-10	A measure of particles in the atmosphere with a diameter of less than or equal to 10 micrometers. PM-10 is one of the six criteria pollutants regulated under the Clean Air Act.
Primary constituent elements	The physical and biological features needed for life and successful reproduction of the species.
Prime Farmlands	A designation assigned by U.S. Department of Agriculture defining land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops.
Propagule	A plant part that becomes detached from the rest of the plant and grows into a new plant.
Right-of-way	The ability to pass over land belonging to another entity for a certain purpose, such as land used for a road, electric transmission line, pipeline, etc.
Riparian	Riparian areas have distinctive soil and vegetation between a stream or other body of water and the adjacent upland, including wetlands.
Riser	A tube, rack, shaft, or conduit used for protection and routing of electrical wiring.
Salmonids	Of, or belonging to, or characteristic of the family Salmonidae which includes salmon, trout, and whitefish.
Scarify	The act of breaking up soil that has been compacted.

Seral	A seral community is an intermediate stage found in ecological succession in an ecosystem advancing towards its climax community. In many cases, more than one seral stage evolves until climax conditions are attained.
Shrub	A woody plant usually less than 15 feet tall with multiple stems. Some plants can be either trees or shrubs depending on growing conditions.
Sock line	A lighter weight line used for pulling/tensioning a new overhead ground wire.
Spark-discharge activity	Electric sparks between electrical separations (gaps) in the metal parts of a transmission line. Spark discharges can create noise and possible electromagnetic interference. Spark-discharge activity with transmission lines is often associated aging connecting hardware.
Special-status species	Plant or animal species in any of the following categories: threatened or endangered species, proposed threatened or endangered species, candidate species, state listed species, BLM sensitive species, BLM assessment species
Species of Concern	An informal term not defined in the federal Endangered Species Act that refers to taxa which the USFWS is reviewing for consideration as Candidates for listing under the ESA. This term commonly refers to species that are declining or appear to be in need of conservation.
State critical	State 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 point of qualifying for threatened or endangered status if conservation actions are not taken.
State vulnerable	State 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.
Structure	Refers to a type of support used to hold up transmission or substation equipment. Structures can be made of wood or steel, depending on the size of the line or equipment. In this EA, the term structure refers to wood-pole structures.
Substation	The fenced site that contains the terminal switching and transformation equipment needed at the end of a transmission line so that energy can be supplied to customers.
Succession(al)	Replacement of one kind of community by another kind; the progressive changes in vegetation and animal life that may culminate in the climax.
System reliability	The ability of a power system to provide uninterrupted service, even while that system is under stress.

Take	Under the ESA, take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.
Tensioning sites	Tensioning sites are used for pulling and tightening the conductor and fiber optic cable to the correct tension once they are mounted on the transmission structures. Tensioning sites are located within the right-of-way where possible or just outside of the right-of-way where the line makes a turn or angle.
Threatened species	Any plants or animals that are likely to become endangered species within the foreseeable future throughout all or a significant portion of their ranges and which have been listed as threatened by the USFWS or the NMFS.
Transmission line	The structures, insulators, conductors, and other equipment used to transmit electrical power from one point to another. In this document, the term transmission line also includes the associated access roads.
Travel route	Either a route through farm fields (temporary travel route) or existing non-public roads in good condition that may require improvement for use (permanent travel route).
Trees within the right-of-way	Trees that are within BPA's transmission line right-of-way that are not considered part of a low-growing plant community. Tall-growing vegetation is removed by BPA as part of ongoing vegetation maintenance before it grows tall enough to interfere with transmission facilities.
Vegetation management	BPA's policies and protocols, including the *Transmission System Vegetation Management Program Final EIS/Record of Decision* (BPA 2000), that guide methods of controlling vegetation within and near electric power facilities. Vegetation that is controlled includes tall-growing species that pose a hazard to power lines, as well as noxious weeds. It also includes methods to encourage the growth of low-growing, desirable species that resist noxious weed invasion.
View	A scene observed from a given vantage point.
Viewers	Viewers include those people who have views of the transmission line. For this project, they include residents, park visitors, employees, motorists (drivers and passengers), rail passengers, bicyclists, and pedestrians.

Visually sensitive locations	Visually sensitive locations have been identified based on their visual quality, uniqueness, cultural significance, or viewer characteristics (Sevi 1986). For this project, visually sensitive locations include residences and parks.
Voltage (or volt)	The driving force that causes a current to flow in an electric circuit. Voltage and volt are often used interchangeably.
Wetland	Wetlands, for the purposes of the Clean Water Act, must meet a three-parameter approach that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, and the wetland must be connected to or have a significant nexus with "waters of the U.S." for an area to be designated as a jurisdictional wetland under the Clean Water Act.
Zoning	Dividing mapped areas into zones or sections reserved for different purposes, such as residences, businesses, manufacturing, etc.

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Appendix A. Vegetation Data Tables

Table A-1. Special-status Plant Species Potentially Occurring within the Project Area

Common Name	Scientific Name	S&M[1]	USFS SSS Status	Ecoregion[2]		Occur in SNF[3]?	Habitat	Likelihood of Occur in Project Area	Survey Recommended
				CR	WV				
Mountain lady's slipper	*Cypripedium montanum*	C	N/A	X		S	A variety of mid-elevation forested habitats	Due to marginal habitat and lack of documented occurrences, presence is unlikely	No
Fungus	*Albatrellus avellaneus*	B	Sensitive-OR	X		D	Mature coniferous forests, from sea level to montane	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Arcangeliella camphorata*	B	Sensitive-OR	X		D	Coastal conifer dominated forests, associated with Douglas-fir and western hemlock	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Chamonixia caespitosa* (*C. pacifica*)	B	Sensitive-OR	X		D	Coniferous forests, associated with western hemlock	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Cortinarius barlowensis*	B	Sensitive-OR	X		D	Low to mid-elevation coniferous forests	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Phaeocollybia californica*	B	Sensitive-OR	X		D	Coastal and other lowland forests; associated with Sitka spruce, Douglas-fir, western hemlock, *Vaccinium* spp.	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Phaeocollybia gregaria*	B	Sensitive-OR	X		D	Moist coastal forests; associated with Sitka spruce and Douglas-fir	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes

Common Name	Scientific Name	S&M[1]	USFS SSS	Ecoregion[2]		Occur in	Habitat	Likelihood of Occur in Project	Survey
Fungus	*Phaeocollybia oregonensis* (*P. carmanahensis*)	B	Sensitive-OR	X		D	Low to mid-elevation coniferous forests; associated with *Abies* spp., Douglas-fir, and western hemlock	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Pseudorhizina californica*	N/A	Sensitive-OR	X		D	Grows on rotting wood in coniferous forests; also occurs in soils subject to physical disturbance	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Ramaria rubella* var. *blanda*	B	Sensitive-OR	X		D	Grows on decaying wood of *Picea* and *Alnus* species in hemlock-dominated forests	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Rhizopogon exiguus*	B	Sensitive-OR	X		D	Low to mid-elevation forests; associated with conifers including Douglas-fir and western hemlock	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Fungus	*Thaxterogaster pavelekii*	B	Sensitive-OR	X		D	Mature coastal forests; associated with shore pine *(Pinus contorta)* and Sitka spruce coarse woody debris and dense bryophyte ground cover	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Noble polypore	*Bridgeopous nobillisimus*	A	Sensitive-OR	X		D	Conifer forests of all seral stages with 36-inch or greater living or legacy material of the true fir species	Possible, though not probable; no herbarium collections for hosts located in the project area; closest known site is Mary's Peak	No
Spidery threadwort	*Blepharostoma arachnoideum*	N/A	Sensitive-OR	X		S	Mature, mesic forests, growing on rotting wood	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes

Common Name	Scientific Name	S&M[1]	USFS SSS	Ecoregion[2]		Occur in	Habitat	Likelihood of Occur in Project	Survey
Nubbly daintyribbons	*Metzgeria violacea*	N/A	Sensitive-OR	X		D	Cool, moist Sitka spruce and western hemlock forests; substrates various, including tree trunks, decaying wood and igneous rocks	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Nested beard lichen	*Usnea nidulans*	N/A	Sensitive-OR	X		D	Moist coastal forests; on conifers and hardwoods; substrates include Sitka spruce and western hemlock and decaying deciduous trees	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
N/A	*Bryoria subcana*	B	Sensitive-OR	X		D	Moist coniferous forests within 30 miles of the coast; on bark or wood of conifer trees	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
N/A	*Erioderma sorediatum*	N/A	Sensitive-OR	X		D	Moist forests near the coast with Sitka spruce; epiphytic on shrubs and western hemlock	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
N/A	*Pseudocyphellaria mallota*	N/A	Sensitive-OR	X		D	Found in younger stands of trees adjacent to or within a matrix of mature forests. Small conifer branches appear to be the dominant growth substrate	Possible; habitat exists within the project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes
Least powderhorn	*Cladonia norvegica*	B	N/A	X		D	On decaying bark or wood at the base of conifer trees and on decaying logs in humid forests, from sea level to 1300m elevation; Sitka spruce/Douglas-fir/Western hemlock forests	Possible; habitat exists in the project area and the species is documented on Lane District BLM lands and Siuslaw NF	Yes
Olive-thorn lichen	*Dendriscocaulon intricatulum*	B	N/A	X			Humid forests; associated with the following cyanolichen genera: *Lobaria, Nephroma, Pseudocyphellaria and Sticta*	Unlikely to occur; not documented in project area on federal lands or herbarium records	No

Common Name	Scientific Name	S&M[1]	USFS SSS	Ecoregion[2]		Occur in	Habitat	Likelihood of Occur in Project	Survey
Duplicate tube lichen	*Hypogymnia duplicatum*	A	N/A	X		D	Mature, mid-elevation forests; on rocks and epiphytic on western hemlock and Douglas-fir (others outside of project area; may also occurs on shore pine coastal foredune habitats	Possible; habitat exists and the species is documented on Siuslaw NF	Yes
Burnet's skin lichen	*Leptogium burnetiae* (*L. hirsutum*)	A	N/A	X	X		Occurs on rocks and decaying logs and as an epiphyte on hardwood tree species	Possible, though not probable. The species is widespread, but rare; no documented occurrences in the project area	No
Skin lichen	*Leptogium cyanescens*	A	Sensitive-OR	X		D	Epiphyte on deciduous trees and shrubs in sheltered coastal locations; occasionally noted on rocks or rotting logs	Possible; habitat exists and the species is documented on Siuslaw NF; herbarium records support likelihood to occur, with several records near western section of project area	Yes
N/A	*Niebla cephalota (Vermilacinia cephalota)*	A	Sensitive-OR	X		D	Exposed open sites near the coastline; documented on Hooker's willow (*Salix hookeriana)*, Sitka spruce and shore pine	Possible; documented in Siuslaw NF; habitat exists in extreme western portion of project area	Yes
N/A	*Pseudocyphellaria perpetua*	B	N/A	X		D	Epiphytic on conifers and hardwoods near the coastline	Possible; habitat exists and species is documented in Siuslaw NF; survey practicality is limited by local occurrences that are concentrated in mid to upper canopy branches	Yes
Rainier pseudocyphellaria lichen	*Pseudocyphellaria rainierensis*	A	N/A	X			Moist, low to mid elevation forests; typically epiphytic on conifer species	Unlikely; no documented occurrences in project area	No

Common Name	Scientific Name	S&M[1]	USFS SSS	Ecoregion[2]		Occur in	Habitat	Likelihood of Occur in Project	Survey
Golden hair lichen	*Teloschistes flavicans*	A	Sensitive-OR	X			Coastal headland forests, typically dominated by Sitka spruce	Possible, though not probable; no documented occurrences in project area, though habitat exists; species is intermittently distributed on the coast	No
Beard lichen	*Usnea hesperina* (*U. subgracilis*)	B	N/A	X		D	Moist, exposed sites in coast fog belt; epiphytic on coniferous trees and hardwood shrubs	Possible; habitat is present in project area and is documented on BLM and Siuslaw NF	Yes
Luminous moss	*Schistostega pennata*	A	Sensitive-OR	X			Occurs on mineral soil in crevices on the lower and more sheltered parts of the root mass of fallen trees; on soil around cave entrances	Possible, though not probable; no documented occurrences in project area, though habitat exists; the stochastic nature of habitat creation and establishment would likely complicate survey efforts	No
Tetraphis moss	*Tetraphis geniculata*	A	Sensitive-OR	X		S	Inhabits rotten stumps and logs, in shaded, humid locations; mature forests with dense canopy cover	Possible; habitat presence in project area confirmed by Siuslaw National Forest Botanist, Waldport District	Yes

Sources: USFS and BLM 2001; USFS 2011.
Notes: 1. Survey & Manage category definitions from 2001 Record of Decision (USFS and BLM 2001)
2. CR = Coast Range; WV = Willamette Valley; 3. D = Documented; S = Suspected

Appendix B. Wildlife Data Tables

Table B-1. Common Wildlife Species Found within 5 Miles of the Project Area

Common Name	Scientific Name
Birds	
Cooper's hawk	*Accipiter cooperii*
Sharp-shinned hawk	*Accipiter striatus*
Spotted sandpiper	*Actitis macularius*
Red-winged blackbird	*Agelaius phoeniceus*
Wood duck	*Aix sponsa*
Northern shoveler	*Anas clypeata*
Mallard	*Anas platyrhynchos*
Western scrub jay	*Aphelocoma californica*
Great-blue heron	*Ardea herodias*
Cedar waxwing	*Bombycilla cedrorum*
Ruffed grouse	*Bonasa umbellus*
Canada goose	*Branta canadensis*
Great-horned owl	*Bubo virginianus*
Red-tailed hawk	*Buteo jamaicensis*
California quail	*Callipepla californica*
Anna's hummingbird	*Calypte anna*
Wilson's warbler	*Cardellina pusilla*
American goldfinch	*Carduelis tristis*
House finch	*Carpodacus mexicanus*
Turkey vulture	*Cathartes aura*
Swainson's thrush	*Catharus ustulatus*
Brown creeper	*Certhia americana*
Belted kingfisher	*Ceryle alcyon*
Vaux's swift	*Chaetura vauxi*
Killdeer	*Charadrius vociferus*
Common nighthawk	*Chordeiles minor*
American dipper	*Cinclus mexicanus*
Northern harrier	*Circus cyaneus*
Downy woodpecker	*Picoides pubescens*
Hairy woodpecker	*Picoides villosus*
Spotted towhee	*Pipilo maculatus*
Marsh wren	*Cistothorus palustris*
Northern flicker	*Colaptes auratus*

Common Name	Scientific Name
Birds (continued)	
Band-tailed pigeon	*Columba fasciata*
Rock pigeon	*Columba livia*
Olive-sided flycatcher	*Contopus cooperi*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Steller's jay	*Cyanocitta stelleri*
Dusky grouse	*Dendragapus obscurus*
Pileated woodpecker	*Dryocopus pileatus*
Pacific-slope flycatcher	*Empidonax difficilis*
Willow flycatcher	*Empidonax traillii*
Brewer's black bird	*Euphagus cyanocephalus*
American kestrel	*Falco sparverius*
American coot	*Fulica americana*
Common yellowthroat	*Geothlypis trichas*
Barn swallow	*Hirundo rustica*
Varied thrush	*Ixoreus naevius*
Dark-eyed junco	*Junco hyemalis*
Herring gull	*Larus argentatus*
Hooded merganser	*Lophodytes cucullatus*
Red crossbill	*Loxia curvirostra*
Song sparrow	*Melospiza melodia*
Common merganser	*Mergus merganser*
Brown-headed cowbird	*Molothrus ater*
Osprey	*Pandion haliaetus*
House sparrow	*Passer domesticus*
Black-headed grosbeak	*Pheucticus melanocephalus*
Black-capped chickadee	*Poecile atricapilla*
Chestnut-backed chickadee	*Poecile rufescens*
Bushtit	*Psaltriparus minimus*
Ruby-crowned kinglet	*Regulus calendula*
Golden-crowned kinglet	*Regulus satrapa*
Rufous hummingbird	*Selasphorus rufus*

Common Name	Scientific Name
Yellow warbler	*Setophaga petechia*
Red-breasted nuthatch	*Sitta canadensis*
White-breasted nuthatch	*Sitta carolinensis*
Red-breasted sapsucker	*Sphyrapicus ruber*
Barred owl	*Strix varia*
European starling	*Sturnus vulgaris*
House wren	*Troglodytes aedon*
Pacific wren	*Troglodytes pacificus*
American robin	*Turdus migratorius*
Western kingbird	*Tyrannus verticalis*
Hutton's vireo	*Vireo huttonii*
Mourning dove	*Zenaida macroura*
White-crowned sparrow	*Zonotrichia leucophrys*
Mammals	
Mountain beaver	*Aplodontia rufa*
Coyote	*Canis latrans*
Beaver	*Castor canadensis*
Elk	*Cervus elaphus*
Virginia opossum	*Didelphis virginiana*
Big brown bat	*Eptesicus fuscus*
Porcupine	*Erethizon dorsatum*
Black-tailed jackrabbit	*Lepus californicus*
River otter	*Lontra canadensis*
Bobcat	*Lynx rufus*
Striped skunk	*Mephitis*
Gray-tailed vole	*Microtus canicaudus*
Townsend's vole	*Microtus townsendii*
Mink	*Mustela vison*
Short-tailed weasel	*Mustela erminea*
Nutria	*Myocastor coypus*
Little brown bat	*Myotis lucifugus*
Black-tailed deer	*Odocoileus hemionus*
Common muskrat	*Ondatra zibethicus*
Deer mouse	*Peromyscus maniculatus*
Northern raccoon	*Procyon lotor*
Norway rat	*Rattus norvegicus*
Townsend's mole	*Scapanus townsendii*

Common Name	Scientific Name
Mammals (continued)	
Western gray squirrel	*Sciurus griseus*
California ground squirrel	*Spermophilus beecheyi*
Brush rabbit	*Sylvilagus bachmani*
Western pocket gopher	*Thomomys mazama*
Townsend's chipmunk	*Tamias townsendii*
Douglas' squirrel	*Tamiasciurus douglasii*
Black bear	*Ursus americanus*
Common gray Fox	*Urocyon cinereoargenteus*
Red fox	*Vulpes*
Reptiles and Amphibians	
Northwestern salamander	*Ambystoma gracile*
Western toad	*Bufo boreas*
Pacific giant salamander	*Dicamptodon tenebrosus*
Northern alligator lizard	*Elagaria coerulea*
Ensatina	*Ensatina eschscholzii*
Western skink	*Eumeces skiltonianus*
Western red-backed salamander	*Plethodon vehiculum*
Pacific chorus frog	*Pseudacris regilla*
Bullfrog	*Rana catesbeiana*
Northern red-legged frog	*Rana aurora*
Bullfrog	*Rana catesbeiana*
Western fence lizard	*Sceloporus occidentalis*
Rough-skinned newt	*Taricha granulosa*
Common garter snake	*Thamnopsis sirtalis*

Table B-2. Threatened, Endangered, Candidate, and Special status Species Potentially Occurring within the Project Area and Potential Impacts from the Proposed Action

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Mammals					
Pallid bat *(Antrozous pallidus pacificus)*	FSOC, SV, FSS	Nest and roost in cliffs and structures; forage from the ground by sensing nearby prey and pouncing. Foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*	FSOC, SCr	Forage within forested habitats and along heavily-vegetated stream corridors. Nest and roost under ridges and in old buildings. Foraging habitat present within the forests and riparian areas of the project area.	Likely	Low	A, B, F, G (D)
Silver-haired bat *(Lasionycteris noctivagans)*	FSOC, SV	Nest and roost under tree bark in conifer and mixed forests; forage above the canopy, over open meadows, and in the riparian zone along water courses. Roosting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Long-eared myotis bat *(Myotis evotis)*	FSOC	Roost in areas with a higher density of conifer snags than similar bat species forage in stands of hardwood trees found at forest edges and riparian areas. Roosting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Fringed myotis bat *(Myotis thysanodes)*	FSOC, SV, FSS	Roost in crevices in buildings, rocks, cliff faces, bridges, and in decadent trees and snags; forage within forest interior and along forest edges, close to the vegetative canopy. Roosting and foraging habitat present within project area.	Likely	Low	A, C, F, G (D)
Long-legged myotis bat *(Myotis volans)*	FSOC, SV	Roost in trees, rock crevices, caves, mines, under bark, stream banks, and buildings; forage over water, and in forest clearings. Foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Yuma myotis bat *(Myotis yumanensis)*	FSOC	Roosts in buildings, mines, caves, and under bridges; forages almost exclusively over water. Roosting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
White-footed vole *(Arborimus albipes)*	FSOC	Inhabits stands of hardwoods and clearings adjacent to coniferous forests. Roosting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Red tree vole *(Arborimus longicaudus)* North Oregon Coast DPS[2]	FC, SV, FSS, S&M	Inhabits moist coniferous forests of western Oregon. Roosting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
North American wolverine (*Gulo luscus*)	FC, ST, FSS	Use many different habitat types, but generally are restricted to areas with high snow pack that remain until late spring in high elevation areas.	Not likely	None	A, B, E
Fisher *(Pekania pennant)* West Coast DPS	FT, SCr, FSS	Prefers mature coniferous forests that lack heavy winter snow accumulation.	Not likely	None	A, C, E (D)
Camas pocket gopher (*Thomomys bulbivorus*)	FSOC	Inhabits low-elevation habitats dominated by herbaceous plants, such as pastures, agricultural fields and roadsides. Breeding and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Birds					
Western grebe *(aechmophorus occidentalis)*	BCC	Inhabit fresh water lakes with large areas of both open water and marsh vegetation in summer; winters mainly on sheltered bays or estuaries on coast, also on large fresh water lakes, rarely on rivers.	Not likely	None	A, B, E
Northern goshawk *(Accipiter gentilis)*	FSOC, SV	Home ranges often consist of a wide range of forest age classes and conditions (Woodbridge 2006). Nest sites are associated with patches of large, dense forest, including true fir, mixed conifer, and Douglas-fir. Breeding and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Grasshopper sparrow (*Ammodramus savannarum)*	SV	Breeds in uplands and prairies with fairly tall grass and weeds and a few scattered shrubs. Breeding and foraging habitat present within project area.	Likely	Low	A, F, G (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Western burrowing owl (*Athene cunicularia hypugaea)*	FSOC, SCa	Breed and forage in open, well-drained areas, such as native prairie, pastures, hayfields, and fallow fields; preys on arthropods, small mammals, birds, amphibians and reptiles. Nesting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Upland sandpiper *(Bartramia longicauda)*	FSOC, SC	Nest and forage in native prairie and dry grasslands. Most of the very small state breeding population is located in Grant County.	Not likely	None	A, B, E
Marbled murrelet *(Brachyramphus marmoratus)*	FT, ST	Nest in older conifer stands of the coast range; forage at sea. Known to nest adjacent to the project area in mature coniferous forests of the Coast range. Designated critical habitat exists within the project area. See Section 3.6.2 for detailed information.	Likely	Moderate	A, F, G (D)
Aleutian cackling goose *(Branta hutchinsii leucopareia)*	FDL, FSS	Feed in wetlands, riparian areas, and agricultural fields; primarily migrate along the Oregon Coast between their nesting grounds in the Aleutian Islands of Alaska and their wintering grounds in California. Migrating and foraging habitat present within the project area.	Likely	Low	A, C, F, G (D)
Purple Finch *(Carpodacus purpureus)*	BCC	Prefer open areas or edges of low- to mid-elevation coniferous forest, but use similar edges in mixed-coniferous-deciduous forests and forested residential areas and riparian thickets in forests. Nesting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)
Black tern (Chlidonias niger)	FSOC	Nest in emergent vegetation along riverbanks and lakeshores; feed in water and adjacent terrestrial environment. An estimated 25 pairs of black terns nest along the southeastern shoreline of Fern Ridge Reservoir (ODFW 2009).	Not likely	Low	A, C, E
Olive-sided flycatcher *(Contopus cooperi)*	FSOC, BCC, SV	Breed in coniferous forests, perching on tall trees or snags during foraging; prefers open woodland and riparian areas. Nesting and foraging habitat present within project area.	Likely	Low	A, B, F, G (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Willow Flycatcher *(Empidonax traillii)*	BCC	Nest and forage in deciduous thickets, especially willows. Nesting and foraging habitat present within project area.	Likely	Low.	A, B, F, G (D)
Streaked horned lark (*Eremophila alpestris strigata)*	FT, SCr	Nest and forage in sparsely vegetated and bare ground habitats, such as grass fields, open pastures, mudflats, and on gravel roads. Nesting and foraging habitat present within project area. See Section 3.6.2 for more detailed information.	Confirmed	Low	F, G (D)
American peregrine falcon *(Falco peregrinus anatum)*	FDL, BCC, SV, FSS	Utilize an array of habitats for nesting and foraging. Nest sites are generally cliff scrapes, or less commonly, in large tree hollows, or on bridges and buildings in urban areas. In general, foraging habitat consists of open areas where peregrines can locate and dive on birds and small mammals from a perch or in-flight. Nesting, roosting, and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Bald eagle (*Haliaeetus leucocephalus*)	FDL, BCC, ST, FSS	Associated with many habitats, including Westside grasslands, agriculture, pastures, Westside oak and Douglas-fir forests, urban and mixed environments, open water, herbaceous wetlands. Nesting, roosting, and foraging habitat present within the project area.	Likely	Low	A, C, F, G (D)
Harlequin duck *(Histrionicus histrionicus)*	FSOC	Nesting populations of harlequin ducks inhabit remote mountain streams and rivers; in winter, primarily in turbulent coastal waters. Wintering and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Yellow-breasted chat *(Icteria virens)*	FSOC, SCr	Breeds primarily with dense, second-growth riparian woodlands and brushy areas, also found in agriculture, pastures, oak and Douglas-fir forests. Nesting and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Short-billed Dowitcher *(Limnodromus griseus)*	BCC	Forages in freshwater ponds with muddy margins during winter months. Wintering and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Marbled Godwit *(Limosa fedoa)*	BCC	In migration and winter around tidal mudflats, marshes, ponds, mainly in coastal regions. Wintering and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Acorn woodpecker *(Melanerpes formicivorus)*	FSOC, SV	Associated with open woodland areas, especially western oak forests. Nesting and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Lewis' woodpecker *(Melanerpes lewis)*	FSOC, SCr	Nest in decayed tree or snag cavities in open forests of pine or cottonwood; forage in open forests with brushy understories. Nesting and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Whimbrel *(Numenius phaeopus)*	BCC	Most common on mudflats, but also found on rocky shores, sandy beaches, salt marshes, flooded agricultural fields, grassy fields near coast. Wintering and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Mountain quail (Oreortyx pictus)	FSOC; SV	Prefers open, lightly wooded habitat; forages on fruit and vegetation. Nesting and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Fox Sparrow *(Passerella liaca)*	BCC	Wooded areas, undergrowth, woodland edges and clearings, streamside thickets, scrubby second growth, stunted coastal forest. Nesting and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Band-tailed pigeon (*Patagioenas fasciata*)	FSOC	Associated with coniferous forests but feeds on nuts and fruits of deciduous trees. Nesting and foraging habitat present within the project area.	Confirmed	Low	F (D)
Oregon vesper sparrow *(Pooecetes gramineus* spp. *affinis)*	FSOC, BCC, SCr	Nest and forages for invertebrates and seeds in upland prairie, grasslands, and savannah habitat types with vegetation less than 18-inch in height. Nesting and foraging habitat present within the project area.	Likely	Low	A, C, F, G (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Purple martin *(Progne subisi)*	FSOC, SCr, FSS	Nest in tree cavities or nesting boxes; forage in open areas near water. In winter, they feed in rainforests, clearings, and agricultural areas. Nesting and foraging habitat present within the project area.	Likely	Low	A, F, G (D)
Rufous hummingbird *(selasphorus rufus)*	BCC	Forest edges, stream sides, mountain meadows; breeding habitat includes forest edges and clearings, and brushy second growth. Nesting and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Northern spotted owl *(Strix occidentalis caurina)*	FT, ST	Nest and forage in large expanses of contiguous mature conifer forests with dense canopy. Roosting and foraging habitat present within the project area. See Section 3.6.2 for detailed information.	Likely	Low	A, F, G (D)
Reptiles and Amphibians					
Coastal tailed frog *(Ascaphus truei)*	FSOC, SV	Inhabits cold, clear, rocky streams in wet forests. Breeding and foraging habitat present within the project area.	Likely	Low	A, C, F, G (D)
Oregon slender salamander (Batrachoseps wrighti)	FSOC, SV	Inhabit moist Douglas-fir and mixed maple, hemlock and redcedar woodlands on the western slopes of the Cascade Mountains; dependent on mature and old-growth stands, commonly in large downed logs. Breeding and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)
Northern red-legged frog *(Rana aurora aurora)*	FSOC, SV	Breed in cool-water ponds, lake edges, or slow-moving streams; associated with lowland forests as well as grasslands, agriculture, and pastures. Breeding and foraging habitat present within the project area.	Likely	Low	A, C, F, G (D)
Foothill yellow-legged frog *(Rana boylii)*	FSOC, SC, FSS	Breeds and forages in small, ephemeral streams to large rivers and within many types of plant communities, including valley-foothill hardwood, coastal scrub, ***chaparral***, valley-foothill riparian, hardwood-conifer, ponderosa pine, and wet meadow. Breeding and foraging habitat present within the project area.	Likely	Low	A, B, F, G (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Oregon spotted frog (Rana pretiosa)	FT, SCr	Inhabits emergent wetlands in forested landscapes, and is usually found in or near a perennial body of water that has both shallow area and floating aquatic plants.	Not likely	Low	A, B, E
Southern torrent salamander *(Rhyacotriton variegates)*	FSOC, SV	Inhabits and breeds in cold, clear streams, seepages, or waterfalls and their corresponding slash zones, mostly in older forests. Found in riparian forests, in talus, and under debris on stream banks during rainy periods. Breeding and foraging habitat present within the project area.	Likely	Low	A, C, G (D)
Northern western pond turtle *(Actinemys marmorata marmorata)*	FSOC, SCr, FSS	Prefers quiet water in small lakes, marshes, and sluggish streams and rivers, but requires basking sites, such as logs or rocks. Nests in dry, well-drained soils in open areas with grass and herbaceous vegetation with trees and shrubs in close proximity. Breeding and foraging habitat present within the project area.	Likely	Low	F, G (D)
Painted turtle *(Chrysemys picta bellii)*	SCr	Inhabits quiet shallow pools, rivers, lake shores, wet meadow bogs, and slow-moving streams, feeding on aquatic plants and insects. Nest in sandy or grassy areas within 165 feet of aquatic habitat. Breeding and foraging habitat present within the project area.	Likely	Low	A, C, F, G (D)
Invertebrates					
Taylor's checkerspot *(Euphydrays editha taylori)*	FE	Inhabit open grasslands and oak balds where food plants for larvae and nectar sources for adults are available. Only found at a few sites in Benton County.	Not likely	None	A, B, E
Fender's blue butterfly *(Icaricia icarioides fender)*	FE	Inhabit upland prairies of the Willamette Valley; breeding areas associated with Kincaid's lupine. Foraging habitat present within the project area. See Section 3.6.2 for detailed information.	Likely	Low	A, C, F, G (D)
Mardon skipper *(Polites mardon)*	FC	Inhabit native, fescue-dominated grasslands. Breeding and foraging habitat present within the project area.	Likely	Low	A, B, F (D)

Species	Status[1]	Habitat	Likelihood of Occurrence in Project Area	Impact from Proposed Action	Reason for Impact Status
Oregon silverspot butterfly (*Speyeria zerene hippolyta)*	FT	Inhabit grasslands of coastal salt spray meadows, stabilized dunes, and montane meadows.	Not Likely	None	A, B, E

Reason for Impact Status:

A. Not observed during field investigation.
B. No documented occurrences within 5 miles.
C. No documented occurrences in project area, but occurs within 5 miles.
D. Species may use/likely to use/possibly uses/may be present/likely present/suitable habitat exists in project area.
E. Species unlikely to use/be present in project area.
F. Impacts are temporary.
G. Impacts minimized by mitigation measures.

Notes: 1. FC = Federal candidate; FDL = Federal delisted; FE = Federal endangered; FSOC = Federal species of concern; FT = Federal threatened; ST = State threatened; SC = State candidate; SCr = State critical; SV = State vulnerable; FSS = U S Forest Service sensitive; S&M = Survey and Manage
2. DPS = distinct population segment